

# FLOOD INSURANCE STUDY

VOLUME 3 OF 32

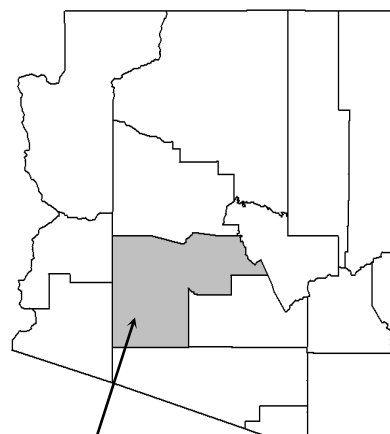


## MARICOPA COUNTY, ARIZONA AND INCORPORATED AREAS

### COMMUNITY NAME

### COMMUNITY NUMBER

AVONDALE, CITY OF	040038
BUCKEYE, CITY OF	040039
CAREFREE, TOWN OF	040126
CAVE CREEK, TOWN OF	040129
CHANDLER, CITY OF	040040
EL MIRAGE, CITY OF	040041
FOUNTAIN HILLS, TOWN OF	040135
GILA BEND, TOWN OF	040043
GILBERT, TOWN OF	040044
GLENDALE, CITY OF	040045
GOODYEAR, CITY OF	040046
GUADALUPE, TOWN OF	040111
LITCHFIELD PARK, CITY OF	040128
MARICOPA COUNTY (UNINCORPORATED AREAS)	040037
MESA, CITY OF	040048
PARADISE VALLEY, TOWN OF	040049
PEORIA, CITY OF	040050
PHOENIX, CITY OF	040051
QUEEN CREEK, TOWN OF	040132
SCOTTSDALE, CITY OF	045012
SURPRISE, CITY OF	040053
TEMPE, CITY OF	040054
TOLLESON, CITY OF	040055
WICKENBURG, TOWN OF	040056
YOUNGTOWN, TOWN OF	040057



Maricopa County

**PRELIMINARY**  
**MONTH XX, XXXX**



Federal Emergency Management Agency

FLOOD INSURANCE STUDY NUMBER  
04013CV003D

## **NOTICE TO FLOOD INSURANCE STUDY USERS**

Communities participating in the National Flood Insurance Program have established repositories of flood hazard data for floodplain management and flood insurance purposes. This Flood Insurance Study (FIS) report may not contain all data available within the Community Map Repository. Please contact the Community Map Repository for any additional data.

The Federal Emergency Management Agency (FEMA) may revise and republish part or all of this FIS report at any time. In addition, FEMA may revise part of this FIS report by Letter of Map Revision process, which does not involve republication or redistribution of the FIS report. Therefore, users should consult community officials and check the Community Map Repository to obtain the most current FIS report components.

Users should refer to Section 10.0, Revisions Description, for further information. Section 10.0 is intended to present the most up-to-date information for specific portions of this FIS report. Therefore, users of this report should be aware that the information presented in Section 10.0 supersedes information in Sections 1.0 through 9.0 of the FIS report.

Initial Countywide FIS Effective Date: April 15, 1988

Revised Countywide Dates: September 29, 1989  
September 4, 1991  
December 3, 1993  
September 30, 1995  
July 19, 2001  
September 30, 2005  
October 16, 2013  
November 4, 2015  
Month XX, XXXX

## **TABLE OF CONTENTS**

### **VOLUME 1**

	<b><u>Page</u></b>
<b>1.0 INTRODUCTION.....</b>	<b>1</b>
1.1 Purpose of Study.....	1
1.2 Authority and Acknowledgments .....	1
1.3 Coordination .....	3
<b>2.0 AREA STUDIED .....</b>	<b>3</b>
2.1 Scope of Study .....	3
2.2 Community Description.....	22
2.3 Principal Flood Problems.....	24
2.4 Flood Protection Measures .....	29
<b>3.0 ENGINEERING METHODS .....</b>	<b>30</b>
3.1 Hydrologic Analyses.....	30

### **FIGURES**

Figures 1-5 - Historic Flooding.....	26-28
--------------------------------------	-------

### **TABLES**

Table 1 - Detailed Study Sources.....	4
Table 2 - Approximate Study Streams .....	12

### **VOLUME 2**

### **TABLES**

Table 3 - Summary of Discharges.....	33
Table 4 - Summary of Stillwater Elevations .....	150

### **VOLUME 3**

3.2 Hydraulic Analyses.....	151
3.3 Vertical Datum.....	166
<b>4.0 FLOODPLAIN MANAGEMENT APPLICATIONS.....</b>	<b>168</b>
4.1 Flood Boundaries .....	168
4.2 Floodways.....	169

## **TABLE OF CONTENTS (Continued)**

### **Page**

### **VOLUME 3 (Continued)**

#### **FIGURES**

Figure 6 - Floodway Schematic .....	171
-------------------------------------	-----

#### **TABLES**

Table 5 - Range of Hydraulic Roughness Coefficients (Manning's "n").....	153
Table 6 - Floodway Data (16 East McMicken-Centennial Wash West Railroad Overflow).....	172

### **VOLUME 4**

#### **TABLES - continued**

Table 6 - Floodway Data (Cereus Wash-Laser Drain – Legend Wash).....	248
--	-----

### **VOLUME 5**

#### **TABLES - continued**

Table 6 - Floodway Data (Lazy G Wash-Sharman Wash) .....	369
--	-----

### **VOLUME 6**

#### **TABLES - continued**

Table 6 - Floodway Data (Skunk Creek-Wash Q) .....	491
--	-----

### **VOLUME 7**

#### **TABLES - continued**

Table 6 - Floodway Data (Wash T1N-R5W-S04-Yucca Flat Wash) .....	617
--	-----

## **TABLE OF CONTENTS (Continued)**

### **VOLUME 8**

	<b><u>Page</u></b>
<b>5.0 INSURANCE APPLICATIONS.....</b>	<b>742</b>
<b>6.0 FLOOD INSURANCE RATE MAP .....</b>	<b>743</b>
<b>7.0 OTHER STUDIES .....</b>	<b>743</b>
<b>8.0 LOCATION OF DATA .....</b>	<b>752</b>
<b>9.0 BIBLIOGRAPHY AND REFERENCES.....</b>	<b>752</b>
<b>10.0 REVISION DESCRIPTIONS.....</b>	<b>764</b>
10.1 First Revision .....	768
10.2 Second Revision .....	774
10.3 Third Revision .....	788
10.4 Fourth Revision.....	804
10.5 Fifth Revision .....	813
10.6 Sixth Revision.....	816
10.7 Seventh Revision .....	853
10.8 Eighth Revision.....	866
10.9 Ninth Revision .....	874

### **TABLES**

Table 7 - Community Map History.....	745
Table 8 - Letters of Map Change (Revision 6) .....	841
Table 9 – Listed of Certified and Accredited Levees .....	855
Table 10 – Letters of Map Change (Revision 7).....	859
Table 11 – Range of Hydraulic Roughness Coefficients (Manning’s “n”) (Revision 9).....	878
Table 12 – Peak flows used in this study (Revision 9) .....	880
Table 13 – Incorporated Letters of Map Revision (Revision 9) .....	887

## **TABLE OF CONTENTS (Continued)**

### **VOLUME 9**

#### **EXHIBITS**

##### Exhibit 1 - Flood Profiles

16 East (McMicken Wash)	Panels 01P-02P
191st Avenue Wash	Panels 03P-06P
ADOT U.S. 60 Channel	Panel 07P
Agua Fria River	Panels 08P-35P
Aguila Farm Channel	Panels 36P-40P
Amir Wash	Panels 41P-42P(b)
Andora Hills Wash	Panels 43P-49P
Andora Hills Wash Split 1	Panel 50P
Andora Hills Wash Split 2	Panel 51P
Apache Wash	Panels 52P-61P
Apache Wash Split Flow Area	Panels 62P-63P
Apache Wash Tributary 1	Panels 64P-65P
Apache Wash Tributary 2	Panels 66P-68P
Apache Wash Tributary 3	Panel 69P
Apache Wash Tributary 4	Panels 70P-71P
Apache Wash Tributary 5	Panel 72P
Apache Wash Tributary 6	Panel 73P
Apache Wash Tributary 7	Panels 74P-75P
Apache Wash West Fork	Panels 76P-78P
Apache Wash West Fork Tributary 1	Panels 79P-80P
Apache Wash West Fork Tributary 2	Panel 81P
Arrow Wash	Panels 82P-84P
Ashbrook Wash	Panels 85P-88P
Atchison Topeka and Santa Fe Railroad Channel	Panels 89P-90P
Balboa Wash	Panels 91P-92P
Beardsley Canal Wash	Panels 93P-95P
Beardsley Wash North	Panels 96P-99P

**TABLE OF CONTENTS (Continued)**

**VOLUME 10**

**EXHIBITS - continued**

Exhibit 1 - Flood Profiles - continued

Beardsley Wash South	Panels 100P-106P
Beardsley Wash South Breakout	Panels 107P-108P
Bedrock Wash	Panels 109P-117P
Bedrock Wash North Fork	Panels 118P-121P
Bender Wash	Panels 122P-129P
Bender Wash North Tributary	Panels 130P-133P
Black Wash	Panel 134P
Blue Tank Wash	Panel 135P
Bonita Dike Channel	Panel 136P
Buchanan Wash	Panels 137P-138P
Buckeye Feeder Canal	Panels 139P-140P(c)
Bullard Wash	Panels 141P-148P
Bullard Wash West Tributary	Panel 149P
Bulldozer Wash	Panels 150P-161P
Calamity Wash	Panels 162P-163P(b)
Caliente Wash	Panels 164P-165P
Camelback Wash	Panels 166P-167P
Camp Creek Tributary A	Panels 168P-173P
Camp Creek Tributary A1	Panels 174P-176P
Camp Creek Tributary A2	Panels 177P-179P
Camp Creek Tributary B	Panels 180P-186P
Camp Creek Tributary B1	Panels 187P-189P
Camp Creek Tributary B2	Panels 190P-194P
Camp Creek Tributary C	Panels 195P-200P

## **TABLE OF CONTENTS (Continued)**

### **VOLUME 11**

#### **EXHIBITS - continued**

##### Exhibit 1 - Flood Profiles - continued

Camp Creek Tributary C1	Panels 201P-203P
Camp Creek Tributary C2	Panels 204P-206P
Camp Creek Tributary C3	Panels 207P-208P
Camp Creek Tributary D	Panels 209P-210P
Casandro Wash	Panels 211P-216P(c)
Casandro Wash South Branch	Panels 217P-218P
Caterpillar Tank Wash	Panels 219P-223P
Cave Creek	Panels 224P-273P
Cave Creek Overflow Channel	Panel 274P
Cave Creek Tributary	Panel 275P
Cave Creek Tributary 1	Panels 276P-280P
Cave Creek Tributary 1A	Panel 281P
Cave Creek Tributary 1B	Panel 282P
Cave Creek Tributary 1C	Panel 283P
Cave Creek Tributary 1D	Panel 284P
Cave Creek Tributary Tributary	Panel 285P
Cave Creek Unnamed Central Tributary	Panels 286P-288P
Cave Creek Wash	Panels 289P-294P
Cemetery Wash	Panels 295P-300P(l)



**TABLE OF CONTENTS (Continued)**

**VOLUME 12**

**EXHIBITS - continued**

Exhibit 1 - Flood Profiles - continued

Cemetery Wash Tributary R-1	Panels 301P-302P(d)
Cemetery Wash Tributary R-2	Panels 303P-305P(h)
Cemetery Wash Tributary R-3	Panel 306P
Centennial Wash	Panels 307P-323P
Centennial Wash Left Overbank	Panels 326P-327P
Centennial Wash North Branch	Panels 334P-335P
Cereus Wash	Panels 336P-338P
Cholla Wash	Panels 339P-356P
Cholla Wash North Fork	Panels 357P-360P
Chukar Wash	Panel 361P
Circle City Area Wash 1	Panels 362P-366P
Circle City Area Wash 2	Panels 367P-368P
Circle City Area Wash 2 Along Atchison, Topeka & Santa Fe Railway	Panels 369P-370P
Circle City Area Wash 3	Panels 371P-374P
Circle City Area Wash 4	Panels 375P-376P
Circle City Area Wash 4 Along Atchison, Topeka & Santa Fe Railway	Panel 377P
Circle City Area Wash 5	Panel 378P
Circle City Area Wash 6	Panels 379P-380P
Circle City Area Wash 7	Panels 381P-382P
Citrus Valley Wash	Panels 383P-384P
Cline Creek	Panels 385P-393P
Cline Creek Split 3	Panel 394P
Colony Wash	Panels 395P-396P

\*Panels 324P-325P and 328P-333P not printed

## **TABLE OF CONTENTS (Continued)**

### **VOLUME 13**

#### **EXHIBITS - continued**

##### Exhibit 1 - Flood Profiles - continued

Cottonwood Creek	Panels 397P-405P
Cottonwood Creek Tributary 1	Panels 406P-407P
Cottonwood Creek Tributary 2	Panels 408P-409P
Cyprus Point Wash	Panels 410P-411P
Daggs Wash	Panels 412P-422P
Daggs Wash East Split Flow	Panel 423P
Daggs Wash West Breakout	Panels 424P-425P
Dale Creek Wash	Panel 426P
Deadman Wash	Panels 427P-431P
Deadman Wash Stream No. 4	Panel 432P
Deadman Wash Stream No. 7	Panel 433P
Deadman Wash Stream No. 12	Panel 434P
Desert Hills Wash	Panels 435P-438P
Desert Hills Wash Tributary	Panel 439P
Desert Hills Wash Tributary 1	Panels 440P-441P
Desert Hills Wash Tributary 2	Panel 442P
Desert Hills Wash Tributary 3	Panel 443P
Desert Hills Wash Tributary 4	Panel 444P
Desert Hills Wash Tributary 5	Panel 445P
Desert Hills Wash Tributary 6	Panels 446P-447P
Desert Lake Wash	Panels 448P-451P
Desert Lake Wash East Fork	Panels 452P-454P
Desert Lake Wash Tributary 2	Panels 455P-456P
Diversion Dike Wash	Panels 457P-458P
Doe Peak Wash	Panels 459P-460P
Doe Peak Wash East Fork	Panels 461P-462P
Doe Peak Wash South Fork	Panels 463P-465P
Dreamy Draw Wash East	Panels 466P-467P
Dreamy Draw Wash West	Panel 468P
East Fork of Cave Creek	Panels 469P-471P
East Garambullo Wash	Panels 472P-473P
Eastern Canal East Embankment Flooding	Panels 474P-478P
Eastern Pima Wash	Panels 479P-480P
Echo Canyon Wash	Panels 481P-485P
Emerald Wash	Panels 486P-487P
Escalante Wash	Panel 488P
Evans Wash	Panels 489P-493P
Fan 6A	Panels 494P-495P

## **TABLE OF CONTENTS (Continued)**

### **VOLUME 14**

#### **EXHIBITS – continued**

##### Exhibit 1 - Flood Profiles - continued

Fan 6A North	Panels 496P-504P
Fan 6A South	Panels 505P-511P
Fan 6C	Panels 512P-514P
Fan 6C North Branch	Panel 515P
Flemming Springs Wash	Panels 516P-519P
Flying E Wash	Panels 520P-524P(b)
Flynn Lane Wash	Panels 525P-526P
Fountain Channel	Panel 527P
Galloway Wash	Panels 528P-534P
Galloway Wash Middle Branch	Panels 535P-538P
Galloway Wash Middle Branch Tributary	Panel 539P
Galloway Wash North Tributary	Panels 540P-546P
Galloway Wash South Branch	Panels 547P-550P
Galloway Wash South Branch Split 1	Panel 551P
Galloway Wash Split 1	Panel 552P
Galloway Wash Split 2	Panel 553P
Galloway Wash Tributary 2	Panels 554P-556P
Galloway Wash Tributary 2A	Panel 557P
Galloway Wash Tributary 2B	Panel 558P
Galloway Wash Unnamed Tributary	Panels 559P-560P
Gila Bend Canal	Panel 561P
Gila River	Panels 562P-575P(a)
Gila River (Below Gilliespie Dam)	Panels 576P-589P
Granite Falls Wash	Panel 590P
Granite Reef Wash	Panels 591P-592P
Grapevine Wash	Panels 593P-594P
Grass Wash	Panels 595P-597P
Greystone Wash	Panel 598P

## **TABLE OF CONTENTS (Continued)**

### **VOLUME 15**

#### **EXHIBITS - continued**

##### Exhibit 1 - Flood Profiles - continued

Hacker Wash	Panels 599P-604P
Hacker Wash Diversion	Panel 605P
Happy Valley Wash	Panel 606P
Hartman Wash	Panels 607P-611P(e)
Hartman Wash Tributary 1	Panel 612P(a)-612P(b)
Hassayampa River	Panels 613P-635P
Hassayampa River Tributary 1E	Panels 636P-640P
Hassayampa River Tributary 1E1	Panels 641P-642P
Hassayampa River Tributary 3E	Panels 643P-644P
Hassayampa River Tributary 4E	Panels 645P-647P
Hassayampa River Tributary 4E Tributary	Panel 648P
Hassayampa River Tributary 4E West Fork	Panel 649P
Hesperus Wash	Panels 650P-651P
Holly Wash	Panels 652P(a)-652P(f)
Hospital Wash	Panel 653P
I-8 Wash East	Panel 654P
I-8 Wash West	Panel 655P
Indian Bend Wash	Panels 656P-662P
Indian Bend Wash Low Flow Channel	Panels 663P-664P
Interstate 10 Wash	Panel 665P
Iona Stock Tank Wash	Panels 666P-667P
Iona Wash	Panels 668P-677P
Iona Wash East	Panels 678P-680P
Iona Wash East Split 1	Panels 681P-683P
Iona Wash East Split 2	Panels 684P-685P
Iona Wash North West Split	Panels 686P-688P
Iona Wash West	Panels 689P-691P
Jacklin Wash	Panel 692P
Jackrabbit Trail Wash	Panels 693P-696P

## **TABLE OF CONTENTS (Continued)**

### **VOLUME 16**

#### **EXHIBITS - continued**

##### Exhibit 1 - Flood Profiles - continued

Jackrabbit Wash	Panels 697P-711P
Jackrabbit Wash Unnamed Tributary	Panels 712P-717P
Jenny Lin Wash	Panels 718P-719P
Kingstree Wash	Panel 720P
Laser Drain	Panel 721P
Legend Wash	Panel 722P
Little San Domingo Wash	Panels 723P-726P
Logan Wash	Panel 727P
Lower El Mirage Wash	Panels 728P-730P
Lower El Mirage Wash Tributary	Panels 731P-732P
Luke Wash	Panels 733P-739P(b)
Luke Wash East Main Tributary	Panels 740P-743P(b)
Luke Wash East Sub Tributary	Panels 744P-745P
Luke Wash Minor Tributary	Panels 746P-747P
Malta Drain	Panel 748P
Mangrum Wash	Panel 749P
Martinez Wash	Panel 750P
McCormick Ranch Lakes East Branch	Panel 751P
McCormick Ranch Lakes West Branch	Panel 752P
McMicken Dam Outlet Wash	Panels 753P-757P
Mesquite Tank Wash	Panels 758P-761P
Mockingbird Wash	Panels 762P-763P
Monarch Wash	Panels 764P-767P(f)
Moon Valley Wash	Panels 768P-769P
Moon Valley Wash Diversion Channel	Panels 770P-771P
Moon Valley Wash North Branch	Panels 772P-776P
Moon Valley Wash North Split	Panels 777P-778P
Moon Valley Wash South Branch	Panels 779P-781P
Morgan City Wash	Panels 782P-791P
Mountain Wash	Panel 792P
Myrtle Avenue Wash	Panels 793P-794P

## **TABLE OF CONTENTS (Continued)**

### **VOLUME 17**

#### **EXHIBITS - continued**

##### Exhibit 1 - Flood Profiles - continued

New River	Panels 795P-810P
New River East Split	Panel 811P
New River Middle Split	Panels 812P-813P
New River West Split	Panels 814P-815P
New River West Tributary 5	Panels 816P-818P
New River West Tributary 10	Panels 819P-822P
New River West Tributary 15	Panels 823P-825P
New River West Tributary 20	Panels 826P-831P
New River West Tributary 20 Tributary 5	Panels 832P-833P
New River West Tributary 20 Tributary 10	Panels 834P-835P
New River West Tributary 25	Panels 836P-837P
New River West Tributary 30	Panels 838P-842P
New River West Tributary 35	Panels 843P-846P
New River West Tributary 40	Panels 847P-849P
New River West Tributary 45	Panels 850P-854P
New River West Tributary 50	Panels 855P-857P
New River West Tributary 50 Tributary 5	Panels 858P-859P
New River West Tributary 55	Panels 860P-865P
New River West Tributary 55 Tributary 5	Panels 866P-868P
New River West Tributary 55 Tributary 10	Panels 869P-876P
New River West Tributary 55 Tributary 15	Panels 877P-883P
New River West Tributary 55 Tributary 20	Panels 884P-885P
New River West Tributary 55 Tributary 30	Panels 886P-887P
North Colony Wash	Panel 888P
Ocotillo Wash	Panels 889P-896P
Ocotillo Wash Split 1	Panels 897P-898P
Ocotillo Wash Tributary 1	Panels 899P-901P
Ocotillo Wash Tributary 1A	Panels 902P-903P
Ocotillo Wash Tributary 2	Panels 904P-908P
Ocotillo Wash Tributary 2 Tributary 1	Panel 909P
Ocotillo Wash Tributary 3	Panels 910P-912P

## **TABLE OF CONTENTS (Continued)**

### **VOLUME 18**

#### **EXHIBITS - continued**

##### Exhibit 1 - Flood Profiles - continued

Ocotillo Wash Tributary 4	Panels 913P-915P
Ocotillo Wash Tributary 5	Panels 916P-917P
Ocotillo Wash Tributary 6	Panel 918P
Osborn Road Wash	Panels 919P-923P
Ox Wash	Panels 924P-925P
Oxford Wash	Panel 926P
Padelford Wash	Panels 927P-931P
Padelford Wash Split 1	Panels 932P-933P
Padelford Wash Split 2	Panels 934P-935P
Padelford Wash Split 3	Panels 936P-937P
Padelford Wash Split 4	Panel 938P
Padelford Wash Split 5	Panel 939P
Padelford Wash Tributary A	Panels 940P-941P
Padelford Wash Tributary B	Panel 942P
Padelford Wash Tributary C	Panels 943P-944P
Paradise Wash	Panels 945P-955P
Paradise Wash West Fork	Panels 956P-957P
Perryville Road Wash	Panels 958P-961P
Pioneer Cemetery Wash	Panels 962P-965P
Powder House Wash	Panels 966P-967P(d)
Powder House Wash Tributary 1	Panel 968P
Powder House Wash Tributary 2	Panel 969P
Powder Wash	Panels 970P-971P
Powerline Wash	Panels 972P-979P
Prospect Wash	Panels 980P-981P
Pyrite Wash	Panel 982P
Queen Creek Wash	Panels 983P-985P
Queen Creek Wash (Above Higley Road)	Panel 986P
Quilotosa Wash	Panels 987P-988P
Quilotosa Wash East Split	Panel 989P
Rainbow Wash	Panels 990P-997P
Rainbow Wash Tributary	Panels 998P-999P
Ranieri Tank Wash	Panels 1000P-1001P
Ranieri Tank Wash Tributary 1	Panels 1002P-1003P
Ranieri Tank Wash Tributary 2	Panel 1004P
Ranieri Tank Wash Tributary 3	Panel 1005P

**TABLE OF CONTENTS (Continued)**

**VOLUME 19**

**EXHIBITS - continued**

Exhibit 1 - Flood Profiles - continued

Rattler Wash	Panels 1006P-1007P
Rawhide Wash	Panels 1008P-1015P
Rawhide Wash Tributary 1	Panels 1016P-1017P
Rawhide Wash Tributary 2	Panels 1018P-1020P
Rawhide Wash Tributary 3	Panel 1021P
Rawhide Wash Tributary 4	Panels 1022P-1024P
Rio Verde Wash 10	Panels 1026P-1035P(g)
Rio Verde Wash 10 Split 4	Panels 1036P-1038P
Rio Verde Wash 10 Split 7	Panels 1039P-1040P(f)
Rio Verde Wash 11	Panels 1041P-1050P(b)
Rio Verde Wash 11 Split 1	Panels 1051P-1052P
Rio Verde Wash 11 Split 2	Panels 1053P-1054P
Rio Verde Wash 11 Split 8	Panels 1055P-1059P
Rio Verde Wash 12	Panels 1060P-1068P
Rio Verde Wash 12 Split 3	Panels 1069P-1071P
Rio Verde Wash 12 Split 6	Panels 1072P-1074P
Rio Verde Wash A	Panels 1075P-1080P(k)
Rio Verde Wash A Split 1	Panels 1081P-1084P
Rio Verde Wash D	Panels 1085P-1086P
Rio Verde Wash F	Panels 1087P-1093P(j)

\*Panel 1025P not printed



## **TABLE OF CONTENTS (Continued)**

### **VOLUME 20**

#### **EXHIBITS - continued**

##### Exhibit 1 - Flood Profiles - continued

Rock Springs Creek	Panels 1094P-1096P
Rodger Creek	Panels 1097P-1102P
Roosevelt Irrigation District Canal Split Flow	Panel 1103P
Rowe Wash	Panels 1104P-1112P
Salt River	Panels 1113P-1128P
Salt River South Split	Panel 1129P
San Domingo Wash	Panels 1130P-1131P
Sand Tank Wash	Panels 1132P-1142P
Sauceda Wash	Panels 1143P-1144P
Scatter Wash	Panels 1145P-1149P
Scatter Wash North Branch	Panels 1150P-1153P
Scott Avenue Wash	Panels 1154P-1163P
Skunk Creek	Panels 1164P-1186P
Skunk Creek Breakout	Panel 1187P
Skunk Creek Tributary 6B	Panels 1188P-1189P
Skunk Creek Tributary 6B North	Panel 1190P
Skunk Creek Tributary 6C	Panels 1191P-1192P
Skunk Creek Tributary 10A	Panel 1193P
Skunk Creek Tributary 10B	Panels 1194P-1196P
Skunk Creek Tributary 12	Panels 1197P-1198P
Skunk Creek Tributary 27.161	Panel 1199P
Skunk Tank Wash	Panels 1200P-1203P
Skyline Wash	Panels 1204P-1205P

**TABLE OF CONTENTS (Continued)**

**VOLUME 21**

**EXHIBITS - continued**

Exhibit 1 - Flood Profiles - continued

Sols Wash	Panels 1206P-1213P
Sols Wash Tributary AH2	Panel 1214P
Sols Wash Tributary AH3	Panels 1215P-1218P
Sols Wash Tributary AH3 Unnamed Tributary	Panel 1219P
Sols Wash Tributary AH4	Panels 1220P-1221P
Sols Wash Tributary AH5	Panels 1222P-1226P
Sonoqui Wash	Panels 1227P-1229P
Sonoran Wash	Panels 1230P-1232P
Stagecoach Pass Wash	Panels 1233P-1245P
Stagecoach Pass Wash Unnamed Tributary	Panels 1246P-1247P
Star Wash	Panels 1248P-1265P
Star Wash Tributary A	Panels 1266P-1267P
Star Wash Tributary B	Panels 1268P-1270P
Star Wash Tributary C	Panels 1271P-1272P
Star Wash Tributary D	Panels 1273P-1276P
Sunburst Wash	Panel 1277P
Sunland Avenue Tributary	Panel 1278P
Sunny Cove Wash	Panel 1279P
Sunny Cove Wash (Upper Reach)	Panels 1280P-1282P(a)
Sunset Wash	Panel 1283P
Sunset Wash Tributary	Panel 1284P
Sunset Wash (Upper Reach)	Panel 1285P
Sweat Canyon Wash	Panels 1286P-1290P
Sycamore Wash	Panel 1291P
Tank Wash	Panels 1292P-1296P
Tank Wash South Branch	Panel 1297P
Tenth Street Wash	Panels 1298P-1299P
Tractor Wash	Panels 1300P-1305P

**TABLE OF CONTENTS (Continued)**

**VOLUME 22**

**EXHIBITS - continued**

Exhibit 1 - Flood Profiles - continued

Tributary C6	Panels 1306P-1309P
Tributary C8	Panels 1310P-1316P
Tributary X1	Panels 1317P-1319P
Tributary X1 Overflow	Panel 1320P
Tributary X1 Splitflow	Panel 1321P
Tributary X2	Panels 1322P-1324P
Tributary X3	Panels 1325P-1327P
Tributary X4A	Panels 1328P-1329P
Tributary X4B	Panels 1330P-1331P
Tributary X5	Panels 1332P-1334P
Trilby Wash	Panels 1335P-1356P
Trilby Wash Middle Channel	Panel 1357P
Trilby Wash West Channel	Panel 1358P
Tulip Wash	Panel 1359P
Turtleback Wash	Panels 1360P-1361P
Tuthill Dike Wash	Panels 1362P-1371P
Twin Buttes Wash	Panels 1372P-1377P
Twin Peaks Wash	Panels 1378P(a)-1378P(j)
Union Pacific Railroad	Panels 1379P-1380P
Union Pacific Railroad Ditch	Panels 1382P-1384P
Unnamed Channel	Panel 1385P
Unnamed Wash No. 1	Panels 1386P-1392P
Unnamed Wash No. 2	Panels 1393P-1398P
Upper Boulders Wash	Panels 1399P-1406P
Upper Fan 5	Panels 1407P-1415P

\* Panel 1381P not printed

**TABLE OF CONTENTS (Continued)**

**VOLUME 23**

**EXHIBITS - continued**

Exhibit 1 - Flood Profiles - continued

Valley Wash	Panels 1416P-1417P
Wagner Wash	Panels 1418P-1424P
Wagon Wash	Panel 1425P
Wash 1 East	Panels 1426P-1427P
Wash 1 West	Panels 1428P-1432P
Wash 2 East (North of the Central Arizona Project Canal)	Panels 1433P-1434P
Wash 2 East (South of the Central Arizona Project Canal)	Panels 1435P-1436P
Wash 2 East Tributary	Panels 1437P-1438P
Wash 2 West (North of the Central Arizona Project Canal)	Panels 1439P-1441P
Wash 2 West (South of the Central Arizona Project Canal)	Panels 1442P-1444P
Wash 2 West Tributary 1	Panels 1445P-1447P(e)
Wash 2 West Tributary 2	Panels 1448P-1450P
Wash 3 East	Panels 1451P-1455P
Wash 3 West	Panels 1456P-1461P
Wash 4 East	Panels 1462P-1463P
Wash 5 East	Panels 1464P-1467P
Wash 6 East	Panels 1468P-1470P
Wash 6 East South	Panel 1471P
Wash 7 East	Panel 1472P
Wash 7 East East Split	Panels 1473P-1474P
Wash 7 East Tributary	Panels 1475P-1476P
Wash 7 East West Split	Panel 1477P
Wash 8 East	Panels 1478P-1480P
Wash 9 (Rio Verde Wash 9)	Panels 1481P-1484P
Wash 9 East	Panels 1485P-1492P
Wash 9 East Split	Panel 1493P
Wash 10 East	Panels 1494P-1497P
Wash 10 East Split 1	Panel 1498P
Wash 10 East Split 2	Panels 1499P-1500P
Wash 11 East	Panels 1501P-1510P
Wash 12 East	Panels 1511P-1514P
Wash 12 East Split	Panel 1515P

## **TABLE OF CONTENTS (Continued)**

### **VOLUME 24**

#### **EXHIBITS - continued**

##### Exhibit 1 - Flood Profiles - continued

Wash 13 East	Panels 1516P-1518P
Wash 14 East	Panel 1519P
Wash AG	Panels 1520P(a)-1520P(d)
Wash B	Panels 1521P-1529P
Wash B Tributary	Panel 1530P
Mockingbird Wash Tributary 1	Panel 1531P
Wash F	Panels 1532P(a)-1532P(c)
Wash F Tributary 1	Panel 1533P
Wash G	Panels 1534P(a)-1534P(b)
Wash H	Panels 1535P-1536P(c)
Wash I	Panels 1537P-1538P(b)
Wash K	Panels 1539P-1542P
Wash K Tributary 1	Panel 1543P(a)-1543P(b)
Wash L	Panels 1544P-1545P(c)
Wash O	Panels 1546P-1547P(c)
Wash P	Panel 1548P
Wash Q	Panels 1549P-1551P(c)
Wash S2	Panel 1552P
Wash T2N-R5W-S27N	Panels 1553P-1555P
Wash T4N-R2W-S09N	Panels 1556P-1557P
Wash T4N-R2W-S15N	Panels 1558P-1559P
Wash T4N-R3W-S07W	Panels 1560P-1561P
Wash T4N-R3W-S08E	Panels 1562P-1565P
Wash T4N-R3W-S08W	Panels 1566P-1568P
Wash T4N-R3W-S09W	Panels 1569P-1571P
Wash T4N-R3W-S10N	Panels 1572P-1573P
Wash T4N-R3W-S10W-Reach-1	Panel 1574P
Wash T4N-R3W-S10W-Reach-2	Panel 1575P
Wash T4N-R3W-S17	Panels 1576P-1578P
Wash T4N-R3W-S18E	Panels 1579P-1582P
Wash T4N-R3W-S18W	Panels 1583P-1586P
Wash T5N-R2W-S07	Panels 1587P-1588P
Wash T5N-R2W-S19E	Panels 1589P-1590P
Wash T5N-R2W-S19W	Panels 1591P-1594P
Wash T5N-R3W-S01S	Panel 1595P
Wash T5N-R3W-S19	Panel 1596P
Wash T5N-R3W-S24E	Panels 1597P-1599P
Waterfall Wash	Panels 1600P-1607P

**TABLE OF CONTENTS (Continued)**

**VOLUME 25**

**EXHIBITS - continued**

Exhibit 1 - Flood Profiles - continued

Waterman Wash	Panels 1608P-1620P(ac)
West Fork White Peak Wash	Panel 1621P
West Garambullo Wash	Panels 1622P-1623P
West Quilotosa Wash	Panels 1624P-1625P
West Split Flow Through El Mirage	Panels 1626P-1627P
White Granite Wash	Panels 1628P-1633P
White Granite Wash North Fork	Panels 1634P-1636P
White Peak Wash	Panels 1637P-1639P
White Tanks No. 3 Wash	Panels 1640P-1646P
White Tanks Wash	Panels 1647P-1653P

**TABLE OF CONTENTS (Continued)**

**VOLUME 26**

**EXHIBITS - continued**

Exhibit 1 - Flood Profiles - continued

White Tanks Wash Tributary 1	Panels 1654P-1657P
Willow Springs Wash	Panels 1658P-1667P
Willow Springs Wash Tributary 1	Panels 1668P-1675P
Willow Springs Wash Tributary 1A	Panels 1676P-1679P
Willow Springs Wash Tributary 2	Panels 1680P-1683P
Willow Springs Wash Tributary 2A	Panels 1684P-1686P
Willow Springs Wash Tributary 4	Panels 1687P-1691P
Willow Springs Wash Tributary 5	Panels 1692P-1695P
Willow Springs Wash Tributary 5A	Panels 1696P-1698P
Willow Springs Wash Tributary 6	Panels 1699P-1701P
Willow Springs Wash Tributary 6A	Panel 1702P
Willow Springs Wash Tributary 6B	Panel 1703P
Willow Springs Wash Tributary 6C	Panel 1704P
Windmill Wash	Panels 1705P-1706P
Windmill Wash North Branch	Panels 1707P-1708P
Windmill Wash South Branch	Panel 1709P
Wittmann Wash	Panels 1710P-1721P
Wittmann Wash North Split	Panel 1722P
Wittmann Wash South Split	Panels 1723P-1724P
Wittmann Wash Tributary	Panels 1725P-1726P
Yucca Flat Wash	Panels 1727P-1728P(i)

## **TABLE OF CONTENTS (Continued)**

### **VOLUME 27**

#### **EXHIBITS - continued**

##### Exhibit 1 - Flood Profiles - continued

Coyote Pass Wash	Panel 1729P
Delaney Wash	Panels 1730P-1734P
Delaney Wash North Split	Panel 1735P
Delaney Wash South Split	Panel 1736P
Dickey Wash	Panels 1737P-1741P
Eastern Canal	Panels 1742P-1744P
Four Mile Wash	Panels 1745P-1756P
Four Mile Wash W1	Panel 1757P
Four Mile Wash W2	Panel 1758P
Gavilan Peak Wash	Panels 1759P-1761P
Kelley Road Wash	Panel 1762P
Lazy G Wash	Panels 1763P-1764P
Luke Wash East Main Split	Panel 1765P
Phillips Wash	Panels 1766P-1771P
Photo View Wash	Panels 1772P-1775P
Photo View Wash Breakout 1	Panel 1776P
Photo View Wash Breakout 2	Panel 1777P
Rio Verde Wash 7	Panels 1778P
Rio Verde Wash 10 Split 7 Tributary 1	Panels 1779P-1784P
Rio Verde Wash 10 Tributary 1	Panels 1785P-1786P
Rio Verde Wash 10 Tributary 2	Panel 1787P
Rio Verde Wash 10 Tributary 2 Split 1	Panel 1788P
Rio Verde Wash 10 Tributary 3	Panel 1789P
Rio Verde Wash 10 Tributary 4	Panel 1790P
Rio Verde Wash A Split 3	Panels 1791P-1793P
Rio Verde Wash A Split 4	Panel 1794P
Rio Verde Wash A Split 8	Panels 1795P-1801P
Rio Verde Wash A Split 9	Panels 1802P-1808P
Rio Verde Wash A Tank Spillway	Panels 1809P-1810P
Rio Verde Wash A Tributary 1	Panels 1811P-1813P
Rio Verde Wash A Tributary 2	Panels 1814P-1815P
Rio Verde Wash F Split 6	Panels 1816P-1819P
Rio Verde Wash F Tributary 2	Panels 1820P-1824P

\*Panel 1765P not printed



## **TABLE OF CONTENTS (Continued)**

### **VOLUME 28**

#### **EXHIBITS - continued**

##### Exhibit 1 - Flood Profiles - continued

Rio Verde Wash I	Panels 1825P-1839P
Rio Verde Wash I Split 4	Panels 1840P-1842P
Rio Verde Wash I Tributary 1	Panels 1843P-1845P
Rio Verde Wash I Tributary 3	Panel 1846P
Rio Verde Wash J	Panels 1847P-1849P
Rio Verde Wash K	Panels 1850P-1864P
Rio Verde Wash K Split 1	Panels 1865P-1866P
Rio Verde Wash K Split 3	Panels 1867P-1869P
Rio Verde Wash K Split 3A	Panels 1870P-1874P
Rio Verde Wash K Split 4	Panel 1875P
Rio Verde Wash K Tributary 1	Panels 1876P-1878P
Rio Verde Wash K Tributary 4	Panels 1879P-1888P
Rio Verde Wash K Tributary 4A	Panels 1889P-1894P
Rio Verde Wash K Tributary 6	Panels 1895P-1903P
Rio Verde Wash K Tributary 6 Split 1	Panels 1904P-1907P
Rio Verde Wash K Tributary 6 Split 2	Panels 1908P-1912P
Rio Verde Wash K Tributary 6 Split 3	Panels 1913P-1915P
Rio Verde Wash K Tributary 6A	Panels 1916P-1923P

## **TABLE OF CONTENTS (Continued)**

### **VOLUME 29**

#### **EXHIBITS - continued**

##### Exhibit 1 - Flood Profiles - continued

Rio Verde Wash K Tributary 6A1	Panels 1924P-1926P
Rio Verde Wash K Tributary 6A2	Panels 1927P-1928P
Rio Verde Wash K Tributary 6A3	Panel 1929P
Rio Verde Wash K Tributary 6B	Panels 1930P-1933P
Rio Verde Wash K Tributary 6C	Panel 1934P
Rio Verde Wash K Tributary 6D	Panels 1935P-1936P
Rio Verde Wash K Tributary 6D1	Panel 1937P
Rio Verde Wash K Tributary 7	Panels 1938P-1940P
Rio Verde Wash K Tributary 8	Panel 1941P
Rio Verde Wash K Tributary 9	Panels 1942P-1947P
Rio Verde Wash K Tributary 10	Panels 1948P-1949P
Rio Verde Wash K Tributary 11	Panels 1950P-1952P
Rio Verde Wash K Tributary 11A	Panels 1953P-1954P
Rio Verde Wash K Tributary 11B	Panel 1955P
Rio Verde Wash K Tributary 12	Panels 1956P-1957P
Rio Verde Wash K Tributary 13	Panels 1958P-1959P
Rio Verde Wash L	Panels 1960P-1967P
Rio Verde Wash P	Panels 1968P-1973P
Rio Verde Wash P Tributary 1	Panel 1974P
Rio Verde Wash P Tributary 2	Panel 1975P
River Creek	Panels 1976P-1977P
Rough Rider Wash	Panels 1978P-1980P
Sharman Wash	Panels 1981P-1982P
Soda Springs Wash	Panels 1983P-1984P
Table Mountain Wash	Panels 1985P-1987P
Table Mountain Wash Tributary 6	Panels 1988P-1989P
Twin Peaks Lane Wash	Panels 1990P-1991P
Wash T1N-R5W-S04	Panel 1992P
Wash T1N-R5W-S04 Split	Panel 1993P
Wash T1N-R5W-S10	Panels 1994P-1995P
Wash T1N-R5W-S15	Panels 1996P-1997P
Wash T1N-R5W-S18	Panel 1998P
Wash T1N-R5W-S22	Panels 1999P-2000P
Wash T1N-R5W-S28E	Panel 2001P
Wash T1N-R5W-S32	Panel 2002P
Wash T1N-R5W-S33E	Panel 2003P
Wash T1N-R5W-S33N	Panel 2004P
Wash T1N-R5W-S33W	Panels 2005P-2006P

## **TABLE OF CONTENTS (Continued)**

### **VOLUME 29 (Continued)**

#### **EXHIBITS - continued**

##### Exhibit 1 - Flood Profiles - continued

Wash T1N-R6W-S1	Panel 2007P
Wash T1N-R6W-S11	Panels 2008P-2009P
Wash T1N-R6W-S12	Panel 2010P
Wash T1N-R6W-S17	Panels 2011P-2012P
Wash T1N-R6W-S18	Panels 2013P-2014P
Wash T1S-R2W-S32A (I63)	Panels 2015P-2017P
Wash T1S-R5W-S09W	Panel 2018P
Wash T1N-R6W-S1	

**TABLE OF CONTENTS (Continued)**

**VOLUME 30**

**EXHIBITS - continued**

Exhibit 1 - Flood Profiles - continued

Wash T1S-R5W-S17	Panels 2019P-2028P
Wash T1S-R5W-S22N	Panels 2029P-2032P
Wash T1S-R5W-S22S	Panels 2033P-2035P
Wash T1S-R5W-S29	Panels 2036P-2040P
Wash T1S-R5W-S29W	Panel 2041P
Wash T1S-R6W-S05S	Panels 2042P-2043P
Wash T1S-R6W-S08	Panels 2044P-2048P
Wash T1S-R6W-S27	Panels 2049P-2050P
Wash T2N-R5W-S27S	Panels 2051P-2052P
Wash T2N-R5W-S28	Panel 2053P
Wash T2N-R5W-S32	Panel 2054P
Wash T2N-R5W-S33E	Panels 2055P-2057P
Wash T2N-R5W-S33W	Panel 2058P
Wash T2N-R6W-S02	Panels 2059P-2060P
Wash T2N-R6W-S05E	Panels 2061P-2064P
Wash T2N-R6W-S05N	Panels 2065P-2068P
Wash T2N-R6W-S05S	Panel 2069P
Wash T2N-R6W-S05W	Panel 2070P
Wash T2N-R6W-S22	Panels 2071P-2072P
Wash T2N-R6W-S28N	Panels 2073P-2076P
Wash T2N-R6W-S36	Panels 2077P-2078P
Wash T2N-R6W-S36W	Panels 2079P-2080P
Wash T2N-R7W-S20W	Panels 2081P-2082P
Wash T2N-R7W-S32E	Panels 2083P-2084P
Wash T2N-R7W-S35W	Panels 2085P-2088P
Wash T3N-R6W-S27W	Panels 2089P-2090P
Wash T3N-R6W-S32	Panel 2091P
Wash T3N-R6W-S33	Panel 2092P
Wash T3N-R6W-S35	Panel 2093P
Wash T5N-R3W-S15-1-1E (West Fork Trilby Wash Tributary 1 East)	Panels 2094P-2095P
Wash T5N-R3W-S15-1E (Trilby Wash Tributary 1 East)	Panels 2096P-2098P
Wash T5N-R3W-S28-3W (Iona Tributary 3 West)	Panels 2099P-2102P
Wash T5N-R4W-S3	Panels 2103P-2104P
Wash T5N-R4W-S7A	Panels 2105P-2106P
Wash T5N-R4W-S7B	Panel 2107P
Wash T5N-R4W-S7C	Panels 2108P-2109P
Wash T5N-R4W-S19	Panels 2110P-2112P

**TABLE OF CONTENTS (Continued)**

**VOLUME 30 (Continued)**

**EXHIBITS - continued**

Exhibit 1 - Flood Profiles - continued

Wash T5N-R4W-S20A

Panels 2113P-2118P

Wash T5N-R4W-S20B

Panels 2119P-2120P

## **TABLE OF CONTENTS (Continued)**

### **VOLUME 31**

#### **EXHIBITS - continued**

##### Exhibit 1 - Flood Profiles - continued

Wash T5N-R4W-S21	Panels 2121P-2125P
Wash T5N-R4W-S30	Panels 2126P-2127P
Wash T5N-R5W-S1	Panel 2128P
Wash T5N-R5W-S3A	Panel 2129P
Wash T5N-R5W-S3B	Panel 2130P
Wash T5N-R5W-S10A	Panels 2131P-2132P
Wash T5N-R5W-S11	Panel 2133P
Wash T5N-R5W-S12	Panel 2134P
Wash T5N-R5W-S13A	Panel 2135P
Wash T5N-R5W-S13B	Panels 2136P-2137P
Wash T5N-R5W-S14	Panel 2138P
Wash T5N-R5W-S14B	Panel 2139P
Wash T5N-R5W-S22	Panel 2140P
Wash T5N-R5W-S23A	Panels 2141P-2142P
Wash T5N-R5W-S23B	Panels 2143P-2146P
Wash T5N-R5W-S23C	Panel 2147P
Wash T5N-R5W-S23D	Panel 2148P
Wash T5N-R5W-S23E	Panel 2149P
Wash T5N-R5W-S23F	Panel 2150P
Wash T5N-R5W-S25A	Panels 2151P-2155P
Wash T5N-R5W-S25B	Panels 2156P-2161P
Wash T5N-R5W-S25C	Panels 2162P-2167P
Wash T5N-R5W-S34C	Panels 2168P-2171P
Wash T5N-R5W-S35	Panels 2172P-2175P
Wash T6N-R4W-S33	Panel 2176P
Wash T6N-R4W-S33A	Panel 2177P
Wash T6N-R5W-S36	Panel 2178P
Wash T6N-R5W-S36A	Panel 2179P
Wash T6N-R5W-S36B	Panel 2180P
West Prong of Waterman Wash	Panels 2181P-2183P
White Spar Wash	Panels 2184P-2185P
Winters Wash	Panels 2186P-2192P
Winters Wash With Embankment	Panel 2193P
Wittmann Wash Tributary 1	Panels 2194P-2198P
Wittmann Wash Tributary 1 Breakout 1	Panel 2199P
Wittmann Wash Tributary 1 Breakout 1 of Breakout 3	Panel 2200P
Wittmann Wash Tributary 1 Breakout 2	Panel 2201P
Wittmann Wash Tributary 1 Breakout 3	Panel 2202P

**TABLE OF CONTENTS (Continued)**

**VOLUME 31 (Continued)**

**EXHIBITS - continued**

Exhibit 1 - Flood Profiles - continued

Wittmann Wash Tributary 1 Breakout 4	Panels 2203P-2204P
Iona Tributary 1 West	Panels 2205P-2208P
Iona Tributary 2 West	Panels 2209P-2210P
Wash T1S-R2W-S18A (J27)	Panel 2211P
Wash T1S-R2W-S18B (J37)	Panels 2212P-2213P
Wash T1S-R2W-S31 (A56)	Panels 2214P-2216P
Wash T1S-R2W-S31B (I70)	Panel 2217P
Wash T1S-R3W-S24A (A60)	Panel 2218P
Wash T2S-R2W-S7A (A52)	Panels 2219P-2220P
Wash T2S-R2W-S7B (A51)	Panels 2221P-2222P
Amir Wash Tributary 1	Panels 2223P-2225P
Amir Wash Tributary 2	Panels 2226P-2227P
Amir Wash Tributary 3	Panels 2228P-2229P
Casandro Wash Southwest Split	Panel 2230P
Casandro Wash Val Vista Split	Panel 2231P
Cemetery Wash Tributary R	Panel 2232P
Cemetery Wash Tributary R-2A	Panels 2233P-2234P
Cemetery Wash Tributary R-4	Panels 2235P-2238P

## **TABLE OF CONTENTS (Continued)**

### **VOLUME 32**

#### **EXHIBITS - continued**

##### Exhibit 1 - Flood Profiles - continued

Centennial Wash Field Overflow (Without Embankment)	Panel 2239P
Centennial Wash West Railroad Overflow (Without Embankment)	Panel 2240P
Flying E Wash Split	Panel 2241P
Flying E Wash Tributary 1	Panels 2242P-2243P
Flying E Wash Tributary 2	Panels 2244P-2245P
Flying E Wash Tributary 3	Panels 2246P-2249P
Flying E Wash Tributary A	Panel 2250P
Harquahala Drainage Channel	Panels 2251P-2252P
Hartman Wash Breakout	Panel 2253P
Hartman Wash Split	Panel 2254P
Hartman Wash Tributary 2	Panels 2255P-2257P
Little San Domingo Wash Tributary 1	Panels 2258P-2262P
Powder House Wash Side Channel	Panel 2263P
Sols Wash Tributary 1S	Panels 2264P-2266P
Sols Wash Tributary 2S	Panels 2267P-2269P
Wash AF	Panels 2270P-2271P
Wash HT07	Panels 2272P-2278P
Wash J	Panels 2279P-2281P
Wash M	Panels 2282P-2284P
Wash N	Panels 2285P-2290P
Yucca Flat Wash Tributary 1	Panel 2291P

#### **PUBLISHED SEPARATELY**

Flood Insurance Rate Map Index  
Flood Insurance Rate Map



### 3.2 Hydraulic Analyses

Analyses of the hydraulic characteristics of flooding from the sources studied were carried out to provide estimates of the elevations of floods of the selected recurrence intervals. Users should be aware that flood elevations shown on the Flood Insurance Rate Map (FIRM) represent rounded whole-foot elevations and may not exactly reflect the elevations shown on the Flood Profiles or in the Floodway Data tables in the Flood Insurance Study (FIS) report. Flood elevations shown on the FIRM are primarily intended for flood insurance rating purposes. For construction and/or floodplain management purposes, users are cautioned to use the flood elevation data presented in this FIS in conjunction with the data shown on the FIRM.

For areas of riverine flooding studied by detailed methods, water-surface elevations for floods of the selected recurrence intervals were computed using the U.S. Army Corps of Engineers (USACE) HEC-2 computer program (U.S. Department of the Army, 1973).

The cross section data for the Agua Fria River were taken from several sources of mapping. A 1981 USACE topographic map for the New River (U.S. Department of the Army, 1981) was used for the river section from the confluence with the Gila River to the confluence with the New River from the New River to Northern Avenue, 1982 City of Glendale mapping was used (City of Glendale, 1982). From Northern Avenue to Grand Avenue and from Beardsley Road to Jomax Road, 1983 Maricopa County maps were used (Maricopa County, 1983). The topographic maps for the reach between Grand Avenue and Bell Road (American Engineering Company, 1982) were furnished by American Engineering Company for the reach between Bell and Beardsley Roads, maps were provided by Cella, Barr, Evans and Associates (Cella Barr Evens & Associates, 1982).

Cross sections for the Gila River were digitized from 1983 topographic maps or taken from as-built data for the Bullard Avenue Bridge.

Cross sections for the Salt River between Central Avenue and 115th Avenue were based on digitized data from topographic mapping. From Central Avenue to Country Club Road in the City of Mesa, cross sections were also taken from topographic mapping (Arizona Department of Transportation, 1982; City of Phoenix, 1983).

For study purposes, Skunk Creek was divided into two sections. Lower Skunk Creek lies between Adobe Dam outlet channel and the sections were also taken from topographic mapping (Arizona Department of Transportation, 1982) Bell Road Bridge. Upper Skunk Creek is from the Central Arizona with a contour interval of 2 feet.

Project channel to Adobe Dam. Cross sections for both reaches were generated using 1974 Maricopa County topographic maps at a scale of 1:2,400, with a contour interval of 2 feet. These maps were supplemented by additional mapping from the City of Phoenix and the USACE at scales of 1:1,200 and 1:2,400, respectively, both cross sections for the Hassayampa River (below Carefree Highway) were field surveyed.

Cross-section data for the following were developed from topographic maps (Harris-Toups Associates, 1976): Skunk Creek above Carefree Highway; Cave Creek above Cave

Creek Dam; Andora Hills, Galloway, Rowe, Grapevine, Ocotillo, Willow Springs, Powder House, Mockingbird, and Little San Domingo Washes; Whitman Drainage; Aguila Farm Channel; Grass, Sand Tank, and Bender Washes; Rodeo Wash and its tributary; Airport, and Scott Avenue Washes; Lower El Mirage Wash and its tributary; Atchison, Topeka & Santa Fe Railway Channel at El Mirage; the Atchison, Topeka & Santa Fe Railway at Peoria; and the Southern Pacific Railroad and its spurs.

Cross-section data for East Branch Scatter Wash and Echo Canyon Washes were developed from topographic maps provided by the City of Phoenix (City of Phoenix, 1967).

Cross-section data for Cave Creek below Arizona Canal and for East Fork of Cave Creek were developed from aerial photographs flown in March 1980 (Aerial Mapping of Phoenix, Arizona, 1980). Cross-section data for Cave Creek between Arizona Canal and Cave Creek Dam were developed from aerial photographs flown in March 1978 (Aerial Mapping of Phoenix, Arizona, 1978).

Cross-section data for the Sols Wash backwater analyses were obtained from topographic maps, at a scale of 1:200, with a contour interval of 2 feet, prepared specifically for this project by Cooper Aerial Survey in March 1986 (Cooper Aerial Survey, 1986). Culvert and bridge data were obtained from the topographic maps and were field checked to verify structural geometry.

Cross-section data for Casandro, South Branch Casandro, Flying E, and Hospital Washes were taken from a USACE Flood Plain Information report for Wickenburg (U.S. Department of the Army, 1965) and from topographic maps (U.S. Department of the Army, 1976).

Cross-section data for Martinez Wash were digitized from topographic maps (U.S. Department of the Army, 1968).

Cross sections were located at close intervals above and below bridges in order to compute the significant backwater effects of these structures. All bridges and culverts were investigated to obtain elevation data and structural geometry.

Locations of selected cross sections used in the hydraulic analyses are shown on the Flood Profiles (Exhibit 1). For stream segments for which a floodway was computed (Section 4.2), selected cross section locations are also shown on the Flood Boundary and Floodway Map (Exhibit 2).

Starting water-surface elevations for all riverine flooding sources, except as noted below, were developed using the slope/area method.

The starting water-surface elevations for the New River were developed through the use of 1985 topographic mapping in the area of its confluence with Skunk Creek. A significant feature of the New River floodplain is the channelization in the vicinity of its confluence with Skunk Creek. This channelization has occurred from approximately 1,500 feet downstream of the Thunderbird Road Bridge upstream to the Greenway Road.

In addition, in the left over bank area above Union Hills Drive, a new wastewater treatment plant with improved channel banks is reflected in the hydraulic model.

For the upper reaches of Skunk Creek, the starting water-surface elevations were computed from the reservoir spillway elevation of 1,377 feet. For the lower reach, normal-depth and New River backwater computations were used.

Hydraulic roughness coefficients (Manning's "n") were selected on the basis of field inspection and engineering judgment. Table 5, "Range of Hydraulic Roughness Coefficients (Manning's "n")" gives the range of Manning's "n" values for each flooding source studied by detailed methods.

**Table 5. Range of Hydraulic Roughness Coefficients (Manning's "n")**

<b><u>Flooding Source</u></b>	<b><u>Channel</u></b>	<b><u>Overbanks</u></b>
191st Avenue Wash	0.012 - 0.030	0.040 - 0.070
Agua Fria River	0.022 - 0.059	0.032 - 0.070
Aguila Farm Channel	0.030	0.040 - 0.050
Airport Wash	0.025	0.035
Andora Hills Wash	0.020 - 0.045	0.020- 0.052
Apache Wash	0.045 - 0.060	0.070
Apache Wash West Fork	0.045 - 0.060	0.070
Atchison, Topeka & Santa Fe Railway Channel	0.032 - 0.037	0.032 - 0.047
Atchison, Topeka & Santa Fe (AT&SF) Railway Channel	0.035 - 0.045	0.030 - 0.080
Atchison, Topeka & Santa Fe Railway Ponding	0.035 - 0.040	0.035 - 0.040
Beardsley Canal Wash	0.024 - 0.035	0.024 - 0.070
Bedrock Wash	0.045 - 0.050	0.035 - 0.070
Bender and Sand Tank Washes	0.025	0.035
Bender Wash	0.025 – 0.080	0.030 - 0.035
Bullard Wash	0.013 - 0.070	0.030 - 0.070
Bulldozer Wash	0.035 - 0.050	0.040 - 0.070
Casandro Wash	0.030 - 0.060	0.040 - 0.060
Casandro Wash South Branch	0.030 - 0.060	0.040 - 0.060
Cave Creek	0.015 - 0.065	0.035 - 0.065

**Table 5. Range of Hydraulic Roughness Coefficients (Manning's "n") (Continued)**

<b><u>Flooding Source</u></b>	<b><u>Channel</u></b>	<b><u>Overbanks</u></b>
Cemetery Wash	0.035 - 0.100	0.040 - 0.100
Centennial Wash	0.030 - 0.070	0.030 - 0.200
Centennial Wash	0.040	0.040
Cholla Wash	0.035 - 0.070	0.030 - 0.070
Circle City Area Washes	0.030 - 0.080	0.030 - 0.080
Cline Creek and Tributaries	0.045 - 0.075	0.045 - 0.080
Consolidated Canal, Ponding	0.025 - 0.075	0.025 - 0.075
Cottonwood Creek	0.030 - 0.060	0.050 - 0.080
Cottonwood Creek Tributary 1	0.045 - 0.050	0.060 - 0.070
Cottonwood Creek Tributary 2	0.050	0.060 - 0.070
Coyote Pass Wash	0.035 - 0.06	0.025 - 0.5
Dale Creek	0.025 - 0.035	0.025 - 0.050
Delaney Wash	0.046 - 0.065	0.02 - 0.065
Delaney Wash North Split	0.046 - 0.065	0.042 - 0.065
Delaney Wash South Split	0.042 - 0.065	0.02 - 0.065
Desert Hills Wash	0.012 - 0.055	0.050 - 0.114
Desert Hills Wash - West Branch	0.050 - 0.060	0.052 - 0.065
Desert Lake Wash	0.050	0.060 - 0.065
Dickey Wash	0.05 - 0.06	0.045 - 0.06
Diversion Dike Wash	0.035	0.035 - 0.070
East Fork of Cave Creek	0.015 - 0.035	0.035 - 0.045
East Garambullo Wash	0.024 - 0.055	0.036 - 0.060
Eastern Canal, Ponding	0.032 - 0.075	0.032 - 0.075
Echo Canyon Wash	0.018 - 0.025	0.012 - 0.035
Fleming Springs Wash	0.038 - 0.060	0.055 - 0.060
Flying E Wash	0.030 - 0.060	0.040 - 0.060
Four Mile Wash	0.02 - 0.075	0.02 - 0.075

**Table 5. Range of Hydraulic Roughness Coefficients (Manning's "n") (Continued)**

<b><u>Flooding Source</u></b>	<b><u>Channel</u></b>	<b><u>Overbanks</u></b>
Four Mile W1	0.037	0.037
Four Mile W2	0.035 - 0.042	0.035 - 0.042
Galloway Wash	0.032 - 0.045	0.016 - 0.045
Galloway Wash	0.032 - 0.045	0.016 - 0.045
Galloway Wash-North Tributary 1	0.025 - 0.040	0.045
Gavilan Peak Wash	0.025 - 0.06	0.025 - 0.5
Gila Bend Canal	0.045	0.050
Gila River	0.030 - 0.120	0.035 - 1.000
Grapevine Wash	0.020 - 0.052	0.020 - 0.046
Grass Wash	0.025 - 0.040	0.025 - 0.045
Hassayampa River	0.030 - 0.050	0.030 - 1.000
Hospital Wash	0.030 - 0.060	0.040 - 0.060
Interstate 10	0.035	0.045 - 0.050
Jackrabbit Trail	0.012 - 0.030	0.012 - 0.060
Jackrabbit Wash	0.030 - 0.035	0.035 - 0.040
Kelley Road Wash	0.035 - 0.06	0.025 - 0.5
Lazy G Wash	0.035 - 0.055	0.055
Little San Domingo Wash	0.030	0.040
Lower El Mirage Wash	0.044	0.044
Lower El Mirage Wash	0.030 - 0.045	0.035 - 0.100
Lower El Mirage Wash Tributary	0.040 - 0.045	0.070 - 0.100
Lower El Mirage Wash Tributary	0.044	0.044
Luke Wash	0.045 - 0.075	0.045 - 0.075
Luke Wash (For concrete box culverts)	0.017	N/A
Luke Wash East Main Split	0.045	0.05
Luke Wash - East Main Tributary	0.045 - 0.06	0.050 - 0.120
Luke Wash - East Sub-Tributary	0.045 - 0.055	0.045 - 0.06

**Table 5. Range of Hydraulic Roughness Coefficients (Manning's "n") (Continued)**

<b><u>Flooding Source</u></b>	<b><u>Channel</u></b>	<b><u>Overbanks</u></b>
Luke Wash - Minor Tributary	0.045	0.05
Martinez Wash	0.025 - 0.060	0.060 - 0.100
McMicken Dam Outlet Wash	0.020 - 0.050	0.035 - 0.080
Mesquite Tank Wash	0.060	0.070
Mockingbird Wash	0.030 - 0.037	0.035 - 0.042
Morgan City Wash	0.035 - 0.100	0.055 - 0.100
New River	0.030 - 0.035	0.030 - 0.060
Centennial Wash North Branch	0.040	0.040
North Fork Bedrock Wash	0.035 - 0.045	0.070
North Fork Cholla Wash	0.070	0.070
North Fork White Granite Wash	0.035	0.070
Ocotillo Wash	0.020 - 0.045	0.020 - 0.052
Ocotillo Wash Tributary 1	0.035 - 0.040	0.045
Ocotillo Wash Tributary 1A	0.032 - 0.035	0.040 - 0.045
Ocotillo Wash Tributary 2	0.035 - 0.045	0.040 - 0.050
Ocotillo Wash Tributary 3	0.045 - 0.055	0.055
Ocotillo Wash Tributary 4	0.025 - 0.045	0.045 - 0.050
Osborn Road Wash	0.030 - 0.035	0.050 - 0.070
Paradise Wash	0.013 - 0.055	0.050 - 0.070
Paradise Wash - West Branch	0.050 - 0.055	0.053 - 0.065
Perryville Road Wash	0.022 - 0.045	0.035 - 0.080
Phillips Wash	0.04 - 0.06	0.045 - 0.06
Photo View Wash	0.038 - 0.55	0.025 - 0.06
Photo View Wash Breakout 1	0.038 - 0.055	0.055
Photo View Wash Breakout 2	0.055	0.055 - 0.5
Photo View Wash Breakout 3	0.055	0.055 - 0.5
Powder House Wash	0.030 - 0.060	0.040 - 0.060

**Table 5. Range of Hydraulic Roughness Coefficients (Manning's "n") (Continued)**

<b><u>Flooding Source</u></b>	<b><u>Channel</u></b>	<b><u>Overbanks</u></b>
Powerline Wash	0.040 - 0.045	0.050 - 0.055
Powerline Wash	0.040 - 0.041	0.043 - 0.055
Rainbow Wash	0.016 - 0.047	0.030 - 0.150
Rainbow Wash Tributary	0.013 - 0.040	0.040 - 0.050
Ranieri Wash	0.050	0.065
Rio Verde Wash 7	0.035 - 0.065	0.045 - 0.065
Rio Verde Wash 10	0.035 - 0.055	0.045 - 0.055
Rio Verde Wash 10 Tributary 1	0.035 - 0.06	0.035 - 0.06
Rio Verde Wash 10 Tributary 2	0.045 - 0.055	0.045 - 0.055
Rio Verde Wash 10 Tributary 2 Split 1	0.045 - 0.055	0.045 - 0.055
Rio Verde Wash 10 Tributary 3	0.045 - 0.055	0.045 - 0.055
Rio Verde Wash 10 Tributary 4	0.045 - 0.055	0.045 - 0.055
Rio Verde Wash A	0.04 - 0.05	0.04 - 0.05
Rio Verde Wash A Tank Spillway	0.04 - 0.05	0.04 - 0.05
Rio Verde Wash A Tributary 1	0.05 - 0.075	0.05 - 0.075
Rio Verde Wash A Tributary 2	0.04 - 0.065	0.04 - 0.065
Rio Verde Wash I	0.05 - 0.055	0.05 - 0.055
Rio Verde Wash I Tributary 3	0.05 - 0.055	0.05 - 0.055
Rio Verde Wash K	0.04 - 0.06	0.04 - 0.06
Rio Verde Wash K Split4	0.04 - 0.06	0.04 - 0.06
Rio Verde Wash K Tributary 6	0.04 - 0.055	0.04 - 0.055
Rio Verde Wash K Tributary 6D	0.05 - 0.055	0.05 - 0.055
Rio Verde Wash K Tributary 6D1	0.045 - 0.06	0.055 - 0.06
Rio Verde Wash K Tributary 6D Split 1	0.05 - 0.055	0.055
Rio Verde Wash K Tributary 11	0.045	0.045
Rio Verde Wash K Tributary 11A	0.045	0.045
Rio Verde Wash K Tributary 11B	0.04 - 0.045	0.045

**Table 5. Range of Hydraulic Roughness Coefficients (Manning's "n") (Continued)**

<b><u>Flooding Source</u></b>	<b><u>Channel</u></b>	<b><u>Overbanks</u></b>
Rio Verde Wash K Tributary 12	0.045 - 0.05	0.045 - 0.05
Rio Verde Wash K Tributary 13	0.04 - 0.06	0.04 - 0.06
Rio Verde Wash P	0.04 - 0.055	0.045 - 0.055
Rio Verde Wash P Tributary 1	0.05 - 0.055	0.05 - 0.055
Rio Verde Wash P Tributary 2	0.05 - 0.055	0.05 - 0.055
River Creek	0.038 - 0.055	0.05 - 0.055
Rodeo Wash	0.025	0.035
Rodeo Wash Tributary	0.025	0.035
Rodger Creek	0.045 - 0.080	0.055 - 0.080
Rough Rider Wash	0.03 - 0.055	0.025 - 0.5
Rowe Wash	0.020 - 0.045	0.020 - 0.052
Rowe Wash Tributary 1	0.045	0.045 - 0.055
Rowe Wash Tributary 2	0.045	0.050 - 0.055
Salt River	0.030 - 0.035	0.040 - 0.050
Sand Tank Wash	0.025 - 0.080	0.035 - 0.060
Scatter Wash, North Branch	0.020 - 0.050	0.070 - 0.150
Scatter Wash, South Branch	0.035	0.045
Scott Avenue Wash	0.025 - 0.080	0.035
Scott Avenue Wash	0.035 - 0.080	0.035 - 0.040
Sharman Wash	0.025 - 0.06	0.025 - 0.06
Skunk Creek	0.020 - 0.050	0.045 - 0.050
Soda Springs Wash	0.025 - 0.06	0.025 - 0.5
Sols Wash	0.035 - 0.065	0.025 - 0.100
South Branch of Tank Wash	0.040 - 0.050	0.050 - 0.055
Southern Pacific Railroad	0.014 - 0.050	0.014 - 0.100
Southern Pacific Railroad & Southern Pacific Spur, Ponding	0.025 - 0.075	0.025 - 0.075
Stagecoach Pass Wash Overflow	0.030	0.040



**Table 5. Range of Hydraulic Roughness Coefficients (Manning's "n") (Continued)**

<b><u>Flooding Source</u></b>	<b><u>Channel</u></b>	<b><u>Overbanks</u></b>
Star Wash	0.030 - 0.035	0.035 - 0.040
Star Wash	0.036 - 0.044	0.043 - 0.045
Sweat Canyon Wash	0.035	0.055
Table Mountain Wash	0.03 - 0.06	0.025 - 0.5
Table Mountain Wash Tributary 6	0.038 - 0.055	0.055
Tank Wash	0.040 - 0.041	0.043 - 0.055
Tank Wash	0.040 - 0.046	0.050 - 0.055
Tractor Wash	0.030 - 0.035	0.035 - 0.075
Tributary A	0.042 - 0.044	0.042
Tributary B	0.042	0.045
Tributary C	0.040	0.045
Tributary D	0.038 - 0.040	0.044 - 0.045
Tributary E	0.038 - 0.040	0.044
Trilby Wash	0.040 - 0.100	0.050 - 0.100
Tuthill Dike Wash	0.016 - 0.030	0.016 - 0.050
Twin Buttes Wash	0.024 - 0.055	0.036 - 0.060
Twin Peaks Lane Wash	0.025 - 0.055	0.025 - 0.5
Union Pacific Railroad	0.035	.035 - 0.05
Unnamed Tributary of Jackrabbit Wash	0.030 - 0.035	0.035 - 0.040
Unnamed Wash No. 1	0.025 - 0.080	0.030 - 0.035
Unnamed Wash No. 2	0.025 - 0.080	0.030 - 0.070
Wagner Wash	0.040 - 0.105	0.065 - 0.100
Wash 2 West Tributary 1	0.033 - 0.082	0.033 - 0.082
Wash T1N-R5W-S04	0.06	0.055
Wash T1N-R5W-S04Split	0.06	0.055
Wash T1N-R5W-S10	0.045	0.055
Wash T1N-R5W-S15	0.05	0.065

**Table 5. Range of Hydraulic Roughness Coefficients (Manning's "n") (Continued)**

<b><u>Flooding Source</u></b>	<b><u>Channel</u></b>	<b><u>Overbanks</u></b>
Wash T1N-R5W-S18	0.045	0.06
Wash T1N-R5W-S22	0.05-0.065	0.065
Wash T1N-R5W-S28E	0.045	0.05
Wash T1N-R5W-S32	0.045	0.05
Wash T1N-R5W-S33E	0.045	0.05
Wash T1N-R5W-S33N	0.055	0.06
Wash T1N-R5W-S33W	0.045	0.05
Wash T1N-R6W-S1	0.04 - 0.06	0.04 - 0.06
Wash T1N-R6W-S11	0.06	0.055
Wash T1N-R6W-S12	0.06	0.055
Wash T1N-R6W-S17	0.02 - 0.065	0.02 - 0.065
Wash T1N-R6W-S18	0.02 - 0.065	0.02 - 0.065
Wash T1S-R2W-S32A	0.039	0.05
Wash T1S-R5W-S17	0.045 - 0.065	0.05 - 0.06
Wash T1S-R5W-S22N	0.075	0.05 - 0.075
Wash T1S-R5W-S22S	0.075	0.05 - 0.075
Wash T1S-R5W-S29	0.04 - 0.08	0.05 - 0.075
Wash T1S-R5W-S29W	0.04	0.05
Wash T1S-R6W-S05S	0.032 - 0.065	0.032 - 0.065
Wash T1S-R6W-S08	0.035 - 0.065	0.035 - 0.065
Wash T1S-R6W-S27	0.02 - 0.06	0.02 - 0.06
Wash T2N-R5W-S27N	0.06	0.05
Wash T2N-R5W-S27S	0.065	0.05
Wash T2N-R5W-S28	0.04	0.06
Wash T2N-R5W-S32	0.05	0.06
Wash T2N-R5W-S33E	0.04 - 0.06	0.06
Wash T2N-R5W-S33W	0.06	0.055

**Table 5. Range of Hydraulic Roughness Coefficients (Manning's “n”) (Continued)**

<b><u>Flooding Source</u></b>	<b><u>Channel</u></b>	<b><u>Overbanks</u></b>
Wash T2N-R6W-S02	0.02 - 0.066	0.02 - 0.066
Wash T2N-R6W-S05E	0.02 - 0.075	0.02 - 0.075
Wash T2N-R6W-S05N	0.044 - 0.072	0.044 - 0.072
Wash T2N-R6W-S05S	0.032 - 0.065	0.032 - 0.065
Wash T2N-R6W-S05W	0.044 - 0.072	0.044 - 0.072
Wash T2N-R6W-S22	0.02 - 0.06	0.02 - 0.06
Wash T2N-R6W-S22S	0.035	0.035
Wash T2N-R6W-S28N	0.02 - 0.06	0.02 - 0.06
Wash T2N-R6W-S36	0.06	0.055
Wash T2N-R6W-S36W	0.045	0.05
Wash T2N-R7W-S20W	0.042 - 0.072	0.02 - 0.072
Wash T2N-R7W-S32E	0.042 - 0.065	0.02 - 0.065
Wash T2N-R7W-S35W	0.02 - 0.065	0.02 - 0.065
Wash T3N-R6W-S27W	0.044 - 0.072	0.02 - 0.072
Wash T3N-R6W-S32	0.044 - 0.072	0.044 - 0.072
Wash T3N-R6W-S33	0.044 - 0.072	0.044 - 0.072
Wash T3N-R6W-S35	0.037 - 0.066	0.037 - 0.066
Wash T5N-R4W-S3	0.040 - 0.065	0.04 - 0.065
Wash T5N-R4W-S7A	0.050	0.065
Wash T5N-R4W-S7B	0.065	0.075
Wash T5N-R4W-S7C	0.060	0.075
Wash T5N-R4W-S19	0.045	0.045 - 0.06
Wash T5N-R4W-S20A	0.040 - 0.045	0.04 - 0.11
Wash T5N-R4W-S20B	0.040 - 0.055	0.04 - 0.06
Wash T5N-R4W-S21	0.040 - 0.045	0.045 - 0.065
Wash T5N-R4W-S30	0.045	0.045 - 0.05
Wash T5N-R5W-S1	0.045	0.045 - 0.07

**Table 5. Range of Hydraulic Roughness Coefficients (Manning's "n") (Continued)**

<b><u>Flooding Source</u></b>	<b><u>Channel</u></b>	<b><u>Overbanks</u></b>
Wash T5N-R5W-S3A	0.050	0.055
Wash T5N-R5W-S3B	0.045 - 0.050	0.04 - 0.055
Wash T5N-R5W-S10A	0.050 - 0.060	0.050 - 0.055
Wash T5N-R5W-S11	0.045 - 0.055	0.045 - 0.055
Wash T5N-R5W-S12	0.050	0.065
Wash T5N-R5W-S13A	0.050	0.065
Wash T5N-R5W-S13B	0.045	0.045 - 0.065
Wash T5N-R5W-S14	0.050 - 0.055	0.05 - 0.055
Wash T5N-R5W-S14B	0.050	0.05
Wash T5N-R5W-S22	0.065	0.050 - 0.065
Wash T5N-R5W-S23A	0.050 - 0.065	0.05 - 0.06
Wash T5N-R5W-S23B	0.045 - 0.060	0.04 - 0.06
Wash T5N-R5W-S23C	0.050	0.05 - 0.055
Wash T5N-R5W-S23D	0.050	0.05 - 0.055
Wash T5N-R5W-S23E	0.050 - 0.055	0.05
Wash T5N-R5W-S23F	0.050	0.055
Wash T5N-R5W-S25A	0.045	0.045 - 0.07
Wash T5N-R5W-S25B	0.045 - 0.06	0.045 - 0.055
Wash T5N-R5W-S25C	0.040 - 0.055	0.04 - 0.065
Wash T5N-R5W-S34C	0.050 - 0.055	0.05 - 0.055
Wash T5N-R5W-S35	0.045 - 0.055	0.04 - 0.055
Wash T6-R4W-S33	0.045 - 0.065	0.045 - 0.065
Wash T6-R4W-S33A	0.040	0.04 - 0.06
Wash T6-R5W-S36	0.045	0.045 - 0.055
Wash T6-R5W-S36A	0.045	0.045 - 0.060
Wash T6-R5W-S36B	0.045	0.05 - 0.06
Waterfall Wash	0.035 - 0.050	0.070 - 0.100

**Table 5. Range of Hydraulic Roughness Coefficients (Manning's "n") (Continued)**

<b><u>Flooding Source</u></b>	<b><u>Channel</u></b>	<b><u>Overbanks</u></b>
Waterman Wash	0.016 - 0.055	0.016 - 0.065
West Fork White Peak Wash	0.024 - 0.055	0.036 - 0.060
West Garambullo Wash	0.024 - 0.055	0.036 - 0.060
West Prong of Waterman Wash	0.036 - 0.038	0.045
White Granite Wash	0.035	0.070
White Peak Wash	0.024 - 0.055	0.036 - 0.060
White Spar Wash	0.025 - 0.06	0.025 - 0.5
White Tanks Wash No. 3	0.035 - 0.045	0.035 - 0.070
Winters Wash	0.02 - 0.065	0.02 - 0.065
Wittmann Area Washes	0.015 - 0.060	0.015 - 0.090
Wittmann Wash Tributary 1	0.033 - 0.077	0.033 - 0.077
Wittmann Wash Tributary 1 Breakout 1	0.033-0.059	0.033-0.059
Wittmann Wash Tributary 1 Breakout 1 of Breakout 3	0.035-0.069	0.035-0.069
Wittmann Wash Tributary 1 Breakout 2	0.033-0.059	0.033-0.059
Wittmann Wash Tributary 1 Breakout 3	0.035-0.069	0.035-0.069
Wittmann Wash Tributary 1 Breakout 4	0.035-0.069	0.035-0.069
Willow Springs Wash	0.020 - 0.045	0.020 - 0.080
Willow Springs Wash Tributary 1	0.030 - 0.040	0.035 - 0.055
Willow Springs Wash Tributary 1A	0.028 - 0.050	0.040 - 0.060
Willow Springs Wash Tributary 2	0.030 - 0.055	0.045 - 0.060
Willow Springs Wash Tributary 2A	0.040 - 0.050	0.050 - 0.055
Willow Springs Wash Tributary 3	0.060	0.080
Willow Springs Wash Tributary 4	0.040 - 0.050	0.050
Willow Springs Wash Tributary 5	0.035 - 0.050	0.045 - 0.060
Willow Springs Wash Tributary 5A	0.040	0.045 - 0.050

Salt River photos for the 1978 and 1980 flooding events were extensively used in establishing channel parameters for bank station identification, "n" values, and flood flow

conveyance patterns. Information from the current airport channelization project was also transferred to the maps. The Salt River model also includes the proposed south dike on the Salt River, which represents an extension of the airport channelization project. This dike is located between Hohokam Expressway (48th Street) and Priest Road on the southern bank of the Salt River.

Water-surface elevations computed in the HEC-2 hydraulic model were calibrated with the known floodplains of the 1978 and 1980 flooding events. This technique involved the adjustment at conveyance boundaries and “n” values.

The starting water-surface elevation for Scatter Wash was taken from Skunk Creek. Manning's “n” values were determined through field investigations and engineering judgment. Scatter Wash is a relatively flat floodplain for the majority of its reach, with a substantial amount of development in some over bank areas. In the upper Scatter Wash drainage basin, it was determined that flood flows would proceed along the many braided streamlines, until they reach I-17. At I-17, the flows will begin to concentrate in the area north of Williams Road. The 1-percent-annual-chance flows at this point will separate into a north and south branch of Scatter Wash. The Scatter Wash, North Branch, passes under I-17 through two culverts, and over I-17 via sheet flow action. Scatter Wash, South Branch, continues to flow southerly along the eastern side of I-17, until it eventually ponds and passes under I-17 at Deer Valley Road. Both branches of Scatter Wash join in the vicinity of Rose Garden Lane and 33rd Avenue. At this location, the flows proceed downstream to their confluence with Skunk Creek.

During periods of heavy runoff, flows from Sand Tank and Bender Washes near Gila Bend are intermixed. Highway and railroad bridges traverse both washes. These structures cannot pass a 1-percent-annual-chance flood, resulting in extensive ponding at each obstruction during floods of low frequency.

Apache Creek is located on an alluvial fan near Apache Junction at the base of the Superstition Mountains. A vast network of intermingling channels exists on the fan. Flooding on alluvial fans is often erratic and unpredictable, and flow may occur on separate parts of an alluvial fan during sequent flood events. Flooding in this area was analyzed using alluvial fan methodology by FEMA.

Much of the flooding in the county is caused by sheet flow that originates from alluvial fans. Flows are intercepted by canal levees, railroad embankments, and elevated roads, causing water to pond behind the embankments. Depths of ponding depend on the elevation of the embankments. When the intercepted runoff exceeds ponding storage capacity, the flow will overtop the embankment, thus eroding the levee. Areas immediately down slope of the breakout will be affected by high water. However, flows will fan out to again become shallow sheet flow that is less than 1 foot in depth. Therefore, many areas in the county have been designated Zone X.

Approximate hydraulic analyses for Bulldog, Apache, and Goldfield Washes and the downstream reach of Weekes Wash were carried out using approximate flow velocities and normal-depth calculations. These analyses revealed that the channels have very little capacity relative to the 1-percent-annual-chance flood, and in some cases, the channels

are nonexistent. Furthermore, the overbank flow is not confined to a well-defined floodplain, causing shallow flooding. The average depth of flooding for the over bank areas was determined to be less than 1 foot.

Areas of ponding on the upstream side of U.S. Highway 60/89 were also studied. Water-surface elevations for these areas were based on the elevation of the highway grade with shallow flows over the highway of less than 1 foot. This results in average shallow flooding depths behind the highway between 1 and 3 feet.

Cross sections were taken perpendicular to the canals and railroad embankments using topographic maps (Aerial Mapping Company, 1977). The top of the embankments were assumed to be the maximum ponding elevation up slope of the embankment. Flood hazard areas were then determined by projecting this elevation up slope to intersect the natural ground.

The canal levees and railroad embankments do not permanently retain storm flows, but divert them along the embankments. Most of the canal levees consist of unconsolidated material. These levees are subject to failure when runoff volumes exceed storage capacity. Potential flood hazard areas on the down slope side of the canals were analyzed for levees exceeding 2 feet in height. This analysis determined the distance required for flow through a break in a levee to spread and be reduced to an average depth of 1 foot, using Manning's equation. This analysis assumed the following:

1. A canal breach could occur at any point.
2. A broad, cresting horizontal weir equation with a head of three feet could be used to determine the length of a breach, resulting in a weir from 50 to 100 feet long.
3. Floodwaters would spread at a 45 degree angle from the breach in the levee.
4. The peak discharge at a potential levee break was the maximum canal capacity or the concentration of peak flows from runoff in the watershed, whichever was greater.

Due to the nature of flooding along the New River, Skunk Creek below Carefree Highway, Lower El Mirage Wash, Scatter Wash below Black Canyon Highway and East Branch Scatter Wash, no 0.2-percent-annual-chance flood profiles were developed. The floodplains of these streams are wide; therefore, flow could increase substantially without significantly raising the water-surface elevation or increasing the velocity of flow. Moreover, most of the area contiguous to the floodplains is subject to sheet flow during a 1-percent-annual-chance flood.

In addition, 2-percent-annual-chance flood profiles for the Agua Fria and New Rivers, Skunk Creek below Carefree Highway, Cave Creek below Cave Creek Dam, East Fork of Cave Creek, and Echo Canyon, Scatter, and East Branch Scatter Washes were not computed.

Flood profiles are not applicable for areas of shallow flooding and ponding; therefore, flood profiles are not presented for any of the canals or other areas of shallow flooding, including Sand Tank and Bender Washes, Rodeo Wash and its tributary, Lower El Mirage Wash Tributary, and Airport and Scott Avenue Washes.

For flooding sources studied by approximate methods, 1-percent-annual-chance flood elevations were computed using Manning's equation, USACE Floodplain Information reports (U.S. Department of the Army, 1967; U.S. Department of the Army, 1972; U.S. Department of the Army, 1965; U.S. Department of the Army, 1964), USGS Flood-Prone Area Maps (U.S. Department of the Interior, 1969, 1972), USGS slope maps (U.S. Department of the Interior, 1974-75), high-resolution Skylab photographs (National Aeronautics and Space Administration, Skylab Earth Terrain Camera Color Photography, 1973; National Aeronautics and Space Administration, Skylab Multispectral Camera Black and White Photography), and USGS topographic maps (U.S. Department of the Interior, 1964, et cetera).

The study was limited to the uses of fixed-bed modeling for the hydraulic analyses. However, with the occurrence of a large flood, substantial changes in the riverbed are expected to occur, particularly where the bottom slope is very non-uniform and/or where other structures, such as bridges, cause local increases in the velocity. Resultant changes in the water-surface elevations can be expected.

The hydraulic analyses for the levee failure scenario for Stagecoach Pass Wash were based on the HEC-RAS model developed by DEI Professional Services (2005). For the levee failure scenario the levee was removed from the cross section and the resulting water-surface elevations determined.

Cross-section data for the Stagecoach Pass Wash Overflow hydraulic analyses were obtained from digital topographic mapping developed from Grading Plan Sand Flower II (American Engineering Company, 1954) and North Scottsdale Floodplain Delineation Study (DEI Professional Services, 2006). The starting water-surface elevation was determined by the slope-area method. Water-surface elevations were computed using the USACE HEC-RAS step-backwater computer program (USACE, 2002).

The hydraulic analyses for this study were based on unobstructed flow. The flood elevations shown on the profiles are thus considered valid only if hydraulic structures remain unobstructed, operate properly, and do not fail.

To obtain current elevation, description, and/or location information for National Geodetic Survey bench marks shown on this map, please contact the Information Services Branch of the National Geodetic Survey at (301) 713-3242, or visit its website at <http://www.ngs.noaa.gov>. To obtain information about Geodetic Densification and Cadastral Survey bench marks produced by the Maricopa County Department of Transportation, please visit the Flood Control District of Maricopa County website at <http://www.fcd.maricopa.gov/Maps/gismaps/apps/gdacs/application/index.cfm>.

### 3.3 Vertical Datum



All FISs and FIRMs are referenced to a specific vertical datum. The vertical datum provides a starting point against which flood, ground, and structure elevations can be referenced and compared. Until recently, the standard vertical datum in use for newly created or revised FISs and FIRMs was the National Geodetic Vertical Datum of 1929 (NGVD 29). With the finalization of the North American Vertical Datum of 1988 (NAVD 88), many FIS reports and FIRMs are being prepared using NAVD 88 as the referenced vertical datum.

All flood elevations shown in this FIS report and on the FIRM are referenced to NAVD 88. Structure and ground elevations in the community must, therefore, be referenced to NAVD 88. It is important to note that adjacent communities may be referenced to NGVD 29. This may result in differences in base flood elevations across the corporate limits between the communities.

Prior versions of the FIS report and FIRM were referenced to NGVD 29. When a datum conversion is effected for an FIS report and FIRM, the Flood Profiles, base flood elevations (BFEs) and ERMs reflect the new datum values. To compare structure and ground elevations to 1-percent-annual-chance flood elevations shown in the FIS and on the FIRM, the subject structure and ground elevations must be referenced to the new datum values.

As noted above, the elevations shown in the FIS report and on the FIRM for Maricopa County are referenced to NAVD 88. Ground, structure, and flood elevations may be compared and/or referenced to NGVD 29 by applying a standard conversion factor.

Due to the statistically significant range in conversion factors, an average conversion factor could not be established for the entire community. The elevations shown in the FIS report and on the FIRM were, therefore, converted to NAVD 88 using information provided by Maricopa County. Users wishing to obtain flood elevations referenced to NGVD 29 may use the following Maricopa County website application: <http://www.fcd.maricopa.gov/Maps/gismaps/apps/gdacs/application/index.cfm>. This web tool allows users to obtain point-specific datum conversion values by zooming in and hovering over a Vertcon point with their mouse. The application requires that the Vertcon layer be turned on by selecting the Vertcon checkbox on the layers menu on the left side of the screen. The Vertcon grid referenced in this web application was also used to convert existing flood elevations from NGVD 29 to NAVD 88.

The BFEs shown on the FIRM represent whole-foot rounded values. For example, a BFE of 102.4 will appear as 102 on the FIRM and 102.6 will appear as 103. Therefore, users that wish to convert the elevations in this FIS to NGVD 29 should apply the stated conversion factor(s) to elevations shown on the Flood Profiles and supporting data tables in the FIS report, which are shown at a minimum to the nearest 0.1 foot.

For more information on NAVD 88, see Converting the National Flood Insurance Program to the North American Vertical Datum of 1988, FEMA Publication FIA-20/June 1992.

## 4.0 **FLOODPLAIN MANAGEMENT APPLICATIONS**

The NFIP encourages State and local governments to adopt sound floodplain management programs. To assist in this endeavor, each FIS provides 1-percent-annual-chance floodplain data, which may include a combination of the following: 10-, 2-, 1-, and 0.2-percent-annual-chance flood elevations; delineations of the 1 and 0.2-percent-annual-chance floodplains; and 1-percent-annual-chance floodway. This information is presented on the FIRM and in many components of the FIS, including Flood Profiles, Floodway Data tables, and Summary of Stillwater Elevation tables. Users should reference the data presented in the FIS as well as additional information that may be available at the local community map repository before making flood elevation and/or floodplain boundary determinations.

### 4.1 Flood Boundaries

To provide a national standard without regional discrimination, the 1-percent-annual-chance flood has been adopted by FEMA as the base flood for floodplain management purposes. The 0.2-percent-annual-chance flood is employed to indicate additional areas of flood risk in the community. For each stream studied by detailed methods, the 1- and 0.2-percent-annual-chance floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using topographic maps at scales of 1:1,200, 1:2,400, 1:4,800, and 1:6,000, with contour intervals of 2 and 4 feet (Harris-Toups Associates, 1976; City of Phoenix, 1967; U.S. Department of the Army, 1976; and Aerial Mapping Company, 1977).

The 1- and 0.2-percent-annual-chance floodplain boundaries are shown on the FIRM (Exhibit 1). In cases where the 1- and 0.2-percent-annual-chance floodplain boundaries are close together, only the 1-percent-annual-chance floodplain boundary has been shown. Small areas within the floodplain boundaries may lie above the flood elevations but cannot be shown due to limitations of the map scale and/or lack of detailed topographic data.

Approximate flood boundaries were delineated using USGS topographic maps and Flood-Prone Areas Maps (U.S. Department of the Interior, 1969, 1972; U.S. Department of the Interior, 1964, et cetera), and high-resolution Skylab photographs (National Aeronautics and Space Administration, Skylab Earth Terrain Camera Color Photography, 1973; National Aeronautics and Space Administration, Skylab Multispectral Camera Black and White Photography).

For Stagecoach Pass Wash the 1- and 0.2-percent-annual-chance floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using digital topographic mapping developed from Grading Plan Sand Flower II (American Engineering Company, 1954) and North Scottsdale Floodplain Delineation Study (DEI Professional Services, 2006).

For Stagecoach Pass Wash Overflow the 1-percent-annual-chance floodplain boundaries have been delineated using the flood elevations determined at each cross section. Between cross sections, the boundaries were interpolated using digital topographic

mapping developed from Grading Plan Sand Flower II (American Engineering Company, 1954) and North Scottsdale Floodplain Delineation Study (DEI Professional Services, 2006).

#### 4.2 Floodways

Encroachment on floodplains, such as structures and fill, reduces flood-carrying capacity, increases flood heights and velocities, and increases flood hazards in areas beyond the encroachment itself. One aspect of floodplain management involves balancing the economic gain from floodplain development against the resulting increase in flood hazard. For purposes of the NFIP, a floodway is used as a tool to assist local communities in this aspect of floodplain management. Under this concept, the area of the 1-percent-annual-chance floodplain is divided into a floodway and a floodway fringe. The floodway is the channel of a stream, plus any adjacent floodplain areas, that must be kept free of encroachment so that the 1-percent-annual-chance flood can be carried without substantial increases in flood heights. Minimum Federal standards limit such increases to 1.0 foot, provided that hazardous velocities are not produced. The floodways in this study are presented to local agencies as minimum standards that can be adopted directly or that can be used as a basis for additional floodway studies.

The floodways presented in this study were computed on the basis of equal-conveyance reduction from each side of the floodplain. The results of these computations are tabulated at selected cross sections for each stream segment for which a floodway is computed (Table 6).

As shown on the FIRM (Exhibit 1), the floodway boundaries were computed at cross sections. Between cross sections, the boundaries were interpolated. In cases where the floodway and 1-percent-annual-chance floodplain boundaries are either close together or collinear, only the floodway boundary has been shown.

The floodways for Little San Domingo, Mockingbird, and Powder House Washes are shown coincident with the 1-percent-annual-chance floodplain boundaries because of high, hazardous velocities in their respective floodplains. No floodway was computed for Cave Creek below Arizona Canal. No floodway was computed for Wittmann Drainage due to the split flow below Center Street. Floodways for Grass Wash below the U.S. Highway 60 bridge and for Aguila Farm Channel were not computed due to excessive overbank losses.

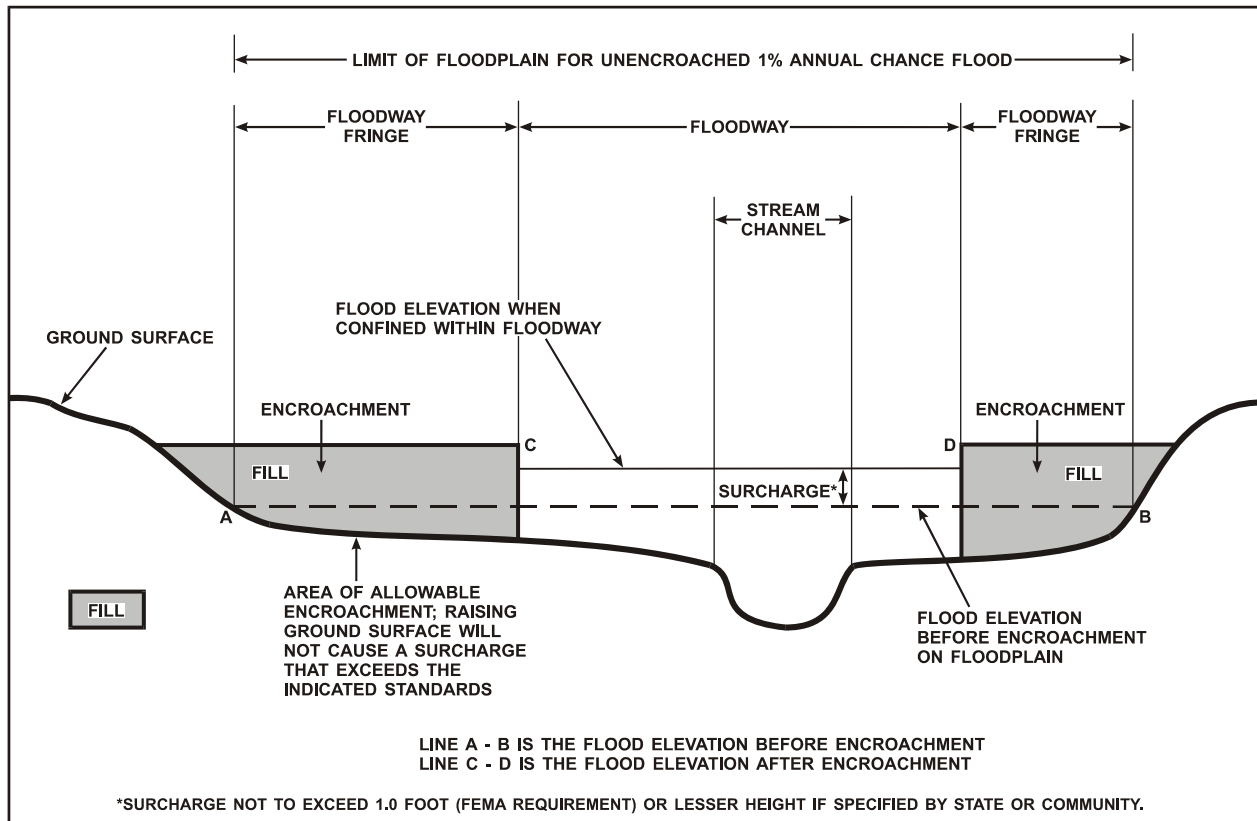
Floodways are not applicable for areas of shallow flooding; therefore, floodways were not computed for any of the canals, railroad embankments, or for Sand Tank and Bender Washes, Rodeo Wash and its tributary, Airport and Scott Avenue Washes, Lower El Mirage Wash Tributary, and Apache Creek.

Administrative floodways have been established for some approximate SFHAs to aid local officials in regulating and managing of these areas.

The area between the floodway and 1-percent-annual-chance floodplain boundaries is termed the floodway fringe. The floodway fringe encompasses the portion of the

floodplain that could be completely obstructed without increasing the water-surface elevation of the 1-percent-annual-chance flood by more than 1.0 foot at any point. Typical relationships between the floodway and the floodway fringe and their significance to floodplain development are shown in Figure 6.

**Figure 6. Floodway Schematic**



FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Amir Wash								
A	2,190	60	331	5.9	2,092.7	2,092.7	2,092.7	0.0
B	2,216	395	1,816	1.0	2,093.3	2,093.3	2,093.3	0.0
C	2,790	77	334	5.5	2,094.3	2,094.3	2,094.3	0.0
D	3,301	37	153	11.9	2,102.5	2,102.5	2,102.5	0.0
E	3,752	30	150	12.2	2,109.2	2,109.2	2,109.4	0.2
F	4,584	137	498	3.7	2,123.4	2,123.4	2,123.7	0.3
G	5,816	72	223	8.2	2,142.4	2,142.4	2,143.2	0.8
H	6,950	135	263	6.9	2,158.3	2,158.3	2,159.2	0.9
I	7,898	70	215	8.5	2,173.8	2,173.8	2,174.5	0.7
J	8,471	61	196	9.3	2,181.7	2,181.7	2,182.7	1.0
K	9,837	56	166	6.3	2,200.4	2,200.4	2,201.2	0.8
L	10,727	72	141	7.4	2,211.5	2,211.5	2,211.5	0.0
M	11,720	121	177	5.9	2,225.4	2,225.4	2,225.4	0.0
N	12,687	42	113	9.2	2,238.0	2,238.0	2,238.4	0.4
O	13,816	90	153	5.3	2,251.0	2,251.0	2,251.8	0.8
P	14,722	80	144	5.6	2,262.8	2,262.8	2,263.5	0.7
Q	15,170	46	98	8.2	2,268.3	2,268.3	2,268.8	0.5

<sup>1</sup>Feet above confluence with Hassayampa River

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ

AND INCORPORATED AREAS

FLOODWAY DATA

AMIR WASH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Blue Tank Wash								
A	1,088	225	629	7.8	2,077.5	2,077.5	2,077.9	0.4
B	1,771	277	660	7.4	2,091.8	2,091.8	2,092.3	0.5
C	2,162	240	636	7.7	2,101.1	2,101.1	2,101.9	0.8
D	2,517	180	577	8.5	2,109.5	2,109.5	2,110.5	1.0
E	3,103	150	553	8.9	2,123.5	2,123.5	2,124.2	0.7
F	3,779	150	575	8.5	2,139.5	2,139.5	2,140.3	0.8
G	4,642	180	558	8.8	2,156.5	2,156.5	2,157.0	0.5
H	5,525	226	652	7.5	2,175.4	2,175.4	2,176.4	1.0

<sup>1</sup>Feet above the confluence with Hassayampa River

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ

AND INCORPORATED AREAS

FLOODWAY DATA

BLUE TANK WASH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Calamity Wash								
A	259	136	416	10.3	2,027.7	2,027.7	2,027.7	0.0
B	917	43	257	13.8	2,043.8	2,043.8	2,043.8	0.0
C	1,443	40	252	14.1	2,056.5	2,056.5	2,056.5	0.0
D	1,912	36	243	14.6	2,069.9	2,069.9	2,070.0	0.1
E	2,439	66	305	11.6	2,081.4	2,081.4	2,018.5	0.1
F	2,936	144	410	8.7	2,094.6	2,094.6	2,094.6	0.0
G	3,367	61	289	12.3	2,102.1	2,102.1	2,102.1	0.0
H	3,878	44	260	13.7	2,116.9	2,116.9	2,116.9	0.0
I	4,321	46	264	13.5	2,130.2	2,130.2	2,130.2	0.0
J	4,748	75	320	10.9	2,140.3	2,140.3	2,140.8	0.5
K	5,406	79	313	11.2	2,155.8	2,155.8	2,155.8	0.0
L	5,897	35	236	14.8	2,171.6	2,171.6	2,171.6	0.0
M	6,413	45	261	13.4	2,182.2	2,182.2	2,182.6	0.4
N	6,913	75	331	10.6	2,192.3	2,192.3	2,192.9	0.6
O	7,337	90	323	10.8	2,202.4	2,202.4	2,202.9	0.5
P	7,873	130	387	9.0	2,213.0	2,213.0	2,213.9	0.9
Q	8,387	115	356	8.9	2,225.2	2,225.2	2,225.6	0.4
R	8,888	135	368	8.7	2,236.9	2,236.9	2,237.9	1.0
S	9,378	84	321	9.9	2,249.7	2,249.7	2,250.7	1.0
T	9,865	47	247	12.9	2,263.1	2,263.1	2,263.1	0.0

<sup>1</sup>Feet above confluence with Hassayampa River

TABLE 6	FEDERAL EMERGENCY MANAGEMENT AGENCY  MARICOPA COUNTY, AZ  AND INCORPORATED AREAS	FLOODWAY DATA
		CALAMITY WASH



FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Calamity Wash (continued)								
U	10,318	25	199	16.0	2,277.1	2,277.1	2,277.1	0.0
V	10,852	40	234	13.6	2,312.1	2,312.1	2,312.1	0.1
W	11,343	31	216	14.7	2,330.7	2,330.7	2,331.0	0.3

<sup>1</sup>Feet above confluence with Hassayampa River

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ

AND INCORPORATED AREAS

FLOODWAY DATA

CALAMITY WASH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Casandro Wash								
A	711	22	76	4.3	2,067.8	2,067.8	2,067.8	0.0
B	1,050	41	44	4.0	2,069.3	2,069.3	2,069.4	0.1
C	1,592	34	38	5.8	2,076.1	2,076.1	2,076.2	0.1
D	2,178	36	32	3.9	2,082.5	2,082.5	2,082.6	0.1
E	2,593	33	52	6.4	2,089.8	2,089.8	2,089.8	0.0
F	3,035	46	61	5.1	2,094.7	2,094.7	2,094.7	0.0
G	3,535	58	160	1.8	2,105.6	2,105.6	2,106.4	0.8
H	4,115	29	45	7.2	2,113.2	2,113.2	2,113.2	0.0
I	4,583	31	9	3.1	2,121.2	2,121.2	2,121.2	0.0
J	5,148	86	14	2.0	2,132.5	2,132.5	2,132.5	0.0
K	5,765	411	287	5.7	2,155.2	2,143.8 <sup>2</sup>	2,143.8	0.0
L	6,866	43	155	10.6	2,168.3	2,168.3	2,168.3	0.0
M	7,764	43	157	10.4	2,185.1	2,185.1	2,185.5	0.4
N	9,011	48	172	9.5	2,201.1	2,201.1	2,201.4	0.3
O	9,603	76	188	8.7	2,209.9	2,209.9	2,210.6	0.7
P	10,675	49	133	8.1	2,222.3	2,222.3	2,222.4	0.1
Q	11,718	27	104	10.4	2,236.1	2,236.1	2,236.1	0.0
R	12,765	35	172	6.3	2,253.0	2,253.0	2,253.3	0.3
S	13,750	39	112	9.6	2,262.3	2,262.3	2,262.6	0.3
T	14,661	88	101	5.7	2,276.9	2,276.9	2,276.9	0.0

<sup>1</sup>Feet above confluence with Sols Wash

<sup>2</sup>Elevation computed without consideration of backwater effects from Casandro Wash Dam

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ

AND INCORPORATED AREAS

FLOODWAY DATA

CASANDRO WASH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Casandro Wash South Branch								
A	238	24	83	7.0	2,220.0	2,220.0	2,220.8	0.8
B	1,005	35	87	8.7	2,233.2	2,233.2	2,233.2	0.0
C	2,107	47	117	5.3	2,247.8	2,247.8	2,248.3	0.5
D	3,245	24	88	5.6	2,265.5	2,265.5	2,265.7	0.2
E	4,262	18	71	5.7	2,281.5	2,281.5	2,281.9	0.4
F	5,058	16	43	9.3	2,292.0	2,292.0	2,292.0	0.0

<sup>1</sup>Feet above confluence with Casandro Wash

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ

AND INCORPORATED AREAS

FLOODWAY DATA

CASANDRO WASH SOUTH BRANCH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Cemetery Wash								
A	1,045	233	875	9.1	2,029.9	2,029.9	2,030.7	0.8
B	1,483	281	1,407	5.7	2,040.6	2,040.6	2,040.7	0.1
C	2,230	461	3,109	6.1	2,048.9	2,048.9	2,049.2	0.3
D	2,584	286	1,264	15.3	2,052.9	2,052.9	2,052.9	0.0
E	3,020	270	1,053	7.6	2,058.8	2,058.8	2,059.6	0.8
F	3,542	163	806	9.9	2,067.3	2,067.3	2,067.9	0.6
G	4,142	110	665	12.0	2,079.1	2,079.1	2,079.5	0.4
H	4,564	65	529	15.1	2,086.6	2,086.6	2,087.2	0.6
I	5,020	49	460	17.4	2,096.3	2,096.3	2,096.4	0.1
J	5,410	115	788	10.1	2,101.5	2,101.5	2,101.9	0.4
K	6,049	80	546	14.6	2,111.5	2,111.5	2,111.5	0.0
L	6,312	98	602	13.3	2,118.8	2,118.8	2,118.9	0.1
M	7,197	171	803	9.9	2,129.2	2,129.2	2,130.1	0.9
N	7,773	130	711	11.2	2,137.7	2,137.7	2,138.5	0.8
O	8,118	145	722	11.0	2,141.7	2,141.7	2,142.6	0.9
P	8,613	123	666	12.0	2,150.4	2,150.4	2,151.0	0.6
Q	9,141	95	617	12.9	2,158.3	2,158.3	2,158.9	0.6
R	9,355	102	592	13.5	2,160.7	2,160.7	2,161.5	0.8
S	10,007	275	969	7.8	2,169.7	2,169.7	2,170.6	0.9
T	10,696	265	854	8.9	2,181.4	2,181.4	2,182.3	0.9
U	11,008	243	815	9.3	2,186.4	2,186.4	2,187.3	0.9
V	11,464	140	713	10.7	2,194.4	2,194.4	2,195.3	0.9

<sup>1</sup>Feet above confluence with Hassayampa River

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ

AND INCORPORATED AREAS

FLOODWAY DATA

CEMETERY WASH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Cemetery Wash (continued)								
W	12,033	147	717	10.6	2,203.2	2,203.2	2,204.0	0.8
X	12,567	92	555	13.7	2,211.0	2,211.0	2,211.8	0.8
Y	13,255	111	584	13.0	2,223.3	2,223.3	2,223.3	0.1
Z	14,496	100	566	13.4	2,244.1	2,244.1	2,244.5	0.4
AA	15,430	95	586	11.8	2,260.1	2,260.1	2,260.8	0.7
AB	16,457	65	457	15.1	2,274.6	2,274.6	2,275.0	0.4
AC	17,462	122	651	10.6	2,289.2	2,289.2	2,290.1	0.9
AD	18,891	114	393	10.3	2,310.3	2,310.3	2,311.0	0.7
AE	19,421	85	367	11.0	2,319.0	2,319.0	2,319.7	0.7
AF	20,347	159	487	8.3	2,334.2	2,334.2	2,335.1	0.9
AG	21,359	156	459	8.8	2,352.2	2,352.2	2,353.1	0.9
AH	22,564	148	455	8.9	2,373.1	2,373.1	2,373.7	0.6
AI	23,418	197	530	7.5	2,385.7	2,385.7	2,386.7	1.0
AJ	24,391	155	441	9.0	2,402.2	2,402.2	2,403.0	0.8
AK	25,411	130	477	8.3	2,418.2	2,418.2	2,419.0	0.8
AL	26,577	284	650	6.1	2,436.7	2,436.7	2,437.6	0.9
AM	27,449	178	518	7.7	2,449.1	2,449.1	2,449.9	0.8
AN	28,223	118	294	7.4	2,461.0	2,461.0	2,461.2	0.2
AO	29,463	116	303	7.2	2,481.8	2,481.8	2,482.8	1.0
AP	30,425	141	334	6.5	2,498.3	2,498.3	2,499.3	1.0
AQ	31,401	65	219	9.9	2,513.7	2,513.7	2,514.6	0.9
AR	32,033	60	224	9.7	2,522.6	2,522.6	2,523.4	0.8

<sup>1</sup>Feet above confluence with Hassayampa River

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ

AND INCORPORATED AREAS

FLOODWAY DATA

CEMETERY WASH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Cemetery Wash Tributary R-1								
A	190	67	450	2.2	2,253.5	2,253.5	2,254.0	0.5
B	1,056	53	117	8.4	2,263.8	2,263.8	2,263.8	0.0
C	2,087	20	84	11.7	2,280.5	2,280.5	2,280.5	0.0
D	3,124	37	107	9.2	2,301.6	2,301.6	2,301.7	0.1
E	4,185	62	127	7.7	2,325.8	2,325.8	2,325.8	0.0
F	5,103	40	110	8.9	2,340.9	2,340.9	2,341.0	0.1
G	6,005	44	115	7.5	2,355.7	2,355.7	2,355.8	0.1
H	7,136	51	139	6.2	2,373.5	2,373.5	2,373.5	0.0
I	8,375	52	114	7.6	2,393.6	2,393.6	2,393.7	0.1
J	9,292	38	104	8.4	2,411.3	2,411.3	2,411.3	0.0
K	10,193	22	31	6.8	2,428.0	2,428.0	2,428.0	0.0
L	11,120	21	31	7.0	2,449.3	2,449.3	2,449.3	0.0
M	12,019	30	35	6.0	2,475.1	2,475.1	2,475.1	0.0
N	12,989	24	32	6.6	2,499.6	2,499.6	2,499.6	0.0

<sup>1</sup>Feet above confluence with Cemetery Wash

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ

AND INCORPORATED AREAS

## FLOODWAY DATA

CEMETERY WASH TRIBUTARY R-1

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Cemetery Wash Tributary R-2								
A	797	139	432	7.1	2,308.6	2,308.6	2,309.0	0.4
B	1,859	144	443	6.9	2,325.9	2,325.9	2,325.9	0.0
C	2,705	221	531	5.8	2,339.7	2,339.7	2,340.6	0.9
D	3,799	198	452	5.5	2,356.2	2,356.2	2,357.1	0.9
E	4,787	158	484	5.1	2,372.0	2,372.0	2,372.0	0.0
F	5,796	141	321	7.7	2,387.0	2,387.0	2,387.8	0.8
G	6,589	90	251	9.3	2,401.4	2,401.4	2,401.7	0.3
H	7,620	103	252	9.2	2,419.1	2,419.1	2,419.2	0.1
I	8,616	310	390	6.0	2,433.5	2,433.5	2,433.9	0.4
J	9,513	217	441	5.3	2,448.1	2,448.1	2,449.0	0.9
K	10,500	195	353	6.3	2,462.0	2,462.0	2,462.9	0.9
L	11,485	110	278	8.0	2,478.4	2,478.4	2,478.4	0.0
M	12,430	190	378	5.9	2,490.4	2,490.4	2,491.1	0.7
N	13,428	225	307	5.6	2,502.8	2,502.8	2,503.6	0.8
O	14,641	240	300	5.7	2,519.5	2,519.5	2,520.2	0.7

<sup>1</sup>Feet above confluence with Cemetery Wash

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ

AND INCORPORATED AREAS

FLOODWAY DATA

CEMETERY WASH TRIBUTARY R-2

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Cemetery Wash Tributary R-3								
A	607	138	272	6.4	2,458.8	2,458.8	2,459.6	0.8
B	1,537	168	302	5.8	2,474.8	2,474.8	2,475.8	1.0
C	2,696	67	196	8.9	2,494.4	2,494.4	2,494.9	0.5
D	3,686	74	133	6.6	2,509.7	2,509.7	2,510.5	0.8
E	4,507	30	90	9.8	2,522.4	2,522.4	2,523.1	0.7
Cemetery Wash Tributary R-4								
A	750	60	148	7.2	2,535.3	2,535.3	2,536.3	1.0

<sup>1</sup>Feet above confluence with Cemetery Wash

TABLE 6	<b>FEDERAL EMERGENCY MANAGEMENT AGENCY</b>  <b>MARICOPA COUNTY, AZ</b>  <b>AND INCORPORATED AREAS</b>	<b>FLOODWAY DATA</b>
		<b>CEMETERY WASH TRIBUTARY R-3 – CEMETERY WASH TRIBUTARY R-4</b>



FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Centennial Wash								
A	6,238	2,780	11,721	3.8	778.2	778.2	779.2	1.0
B	7,305	1,679	9,783	4.7	784.1	784.1	784.9	0.8
C	8,223	1,485	9,832	5.3	786.5	786.5	787.4	0.9
D	9,331	1,792	10,766	4.1	789.1	789.1	789.7	0.6
E	10,373	1,934	10,543	4.2	792.1	792.1	792.7	0.6
F	11,607	2,602	18,738	2.4	796.1	796.1	796.9	0.8
G	12,307	2,737	17,960	2.5	797.1	797.1	798.0	0.9
H	13,241	2,883	16,880	2.6	799.5	799.5	800.2	0.7
I	14,438	2,726	18,798	2.3	802.9	802.9	803.7	0.8
J	15,322	2,558	18,717	2.4	804.9	804.9	805.8	0.9
K	16,264	2,506	19,020	2.3	806.7	806.7	806.6	0.9
L	17,269	3,072	22,761	1.9	808.3	808.3	809.1	0.9
M	18,231	3,239	19,617	2.3	809.0	809.0	810.0	1.0
N	19,327	2,854	13,638	3.2	810.9	810.9	811.6	0.7
O	20,290	2,364	12,763	3.5	814.3	814.3	814.8	0.5
P	21,494	2,018	14,151	3.1	816.8	816.8	817.3	0.6
Q	22,292	1,884	11,737	3.8	817.8	817.8	818.5	0.7
R	23,567	2,109	13,879	3.2	820.3	820.3	820.9	0.6
S	24,298	2,439	12,524	3.5	821.5	821.5	822.2	0.7

<sup>1</sup>Feet above confluence with Gila River

TABLE 6

**FEDERAL EMERGENCY MANAGEMENT AGENCY**  
**MARICOPA COUNTY, AZ**  
**AND INCORPORATED AREAS**

**FLOODWAY DATA**

**CENTENNIAL WASH**

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Centennial Wash (continued)								
T	25,508	2,796	13,777	3.2	823.7	823.7	824.7	1.0
U	26,349	2,770	13,146	3.4	825.2	825.2	826.2	0.9
V	27,423	2,673	13,383	3.3	828.0	828.0	828.9	0.9
W	28,172	2,735	13,369	3.3	829.9	829.9	830.7	0.7
X	29,425	2,778	12,967	3.4	832.4	832.4	833.3	0.9
Y	30,303	2,960	13,997	3.2	834.1	834.1	834.9	0.8
Z	31,201	3,446	14,858	3.0	835.7	835.7	836.3	0.6
AA	32,392	4,722	16,378	3.0	838.2	838.2	839.0	0.8
AB	33,573	5,879	21,611	2.4	840.8	840.8	841.6	0.8
AC	34,384	6,210	23,546	2.2	841.9	841.9	842.6	0.7
AD	35,205	10,394	3,779	5.7	848.4	848.4	849.4	1.0
AE	37,193	10,361	4,199	5.7	854.5	854.5	855.0	0.5
AF	39,000	10,339	5,025	4.7	859.3	859.3	859.8	0.5
AG	41,345	10,464	17,671	1.6	859.6	859.6	860.5	0.9
AH	43,330	3,444	14,314	3.1	861.8	861.8	862.1	0.3
AI	45,329	3,271	11,795	3.3	865.3	865.3	865.9	0.6
AJ	47,328	4,744	14,149	2.7	869.0	869.0	869.5	0.5
AK	49,343	3,728	10,407	3.7	873.3	873.3	873.3	0.1
AL	51,337	1,970	8,114	4.8	878.8	878.8	879.5	0.7
AM	53,330	1,906	7,811	4.9	883.6	883.6	884.2	0.6

<sup>1</sup>Feet above confluence with Gila River

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ

AND INCORPORATED AREAS

FLOODWAY DATA

CENTENNIAL WASH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/ SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Centennial Wash (continued)								
AN	55,403	1,917	9,000	4.3	887.8	887.8	888.4	0.6
AO	57,225	1,929	8,403	4.6	891.9	891.9	892.6	0.7
AP	59,228	2,479	10,037	3.8	896.8	896.8	897.3	0.5
AQ	61,318	1,985	8,928	4.3	901.4	901.4	902.2	0.8
AR	63,224	1,836	9,344	4.1	906.7	906.7	907.7	1.0
AS	65,260	1,373	8,269	4.7	911.8	911.8	912.4	0.6
AT	67,446	1,859	9,968	3.9	916.6	916.6	917.2	0.6
AU	69,450	2,672	13,253	2.9	921.8	921.8	922.7	0.9
AV	71,448	2,319	12,746	3.0	925.7	925.7	926.5	0.8
AW	73,563	1,821	7,735	5.0	930.0	930.0	930.3	0.3
AX	75,200	1,047	7,049	5.5	935.3	935.3	935.8	0.5
AY	77,205	1,680	12,243	3.2	941.5	941.5	942.3	0.8
AZ	79,300	1,531	7,574	5.1	945.1	945.1	945.4	0.3
BA	81,380	1,385	7,269	5.3	949.8	949.8	950.4	0.6
BB	83,383	1,760	8,854	4.4	956.7	956.7	957.5	0.8
BC	85,401	1,128	5,048	7.6	961.7	961.7	962.0	0.3
BD	87,413	958	5,809	6.6	969.8	969.8	970.5	0.7
BE	89,463	1,144	4,986	7.7	975.2	975.2	975.6	0.4
BF	91,487	809	5,100	7.6	983.3	983.3	983.9	0.6
BG	93,461	767	5,022	7.7	990.6	990.6	990.7	0.1

<sup>1</sup>Feet above confluence with Gila River

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY  
MARICOPA COUNTY, AZ  
AND INCORPORATED AREAS

FLOODWAY DATA

CENTENNIAL WASH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Centennial Wash (continued)								
BH	95,427	724	4,990	7.7	996.6	996.6	997.3	0.7
BI	97,453	731	4,823	8.0	1,003.7	1,003.7	1,004.4	0.7
BJ	99,473	783	5,794	6.7	1,010.6	1,010.6	1,011.0	0.4
BK	101,475	792	6,072	6.4	1,015.8	1,015.8	1,016.5	0.7
BL	103,489	933	6,654	5.8	1,021.7	1,021.7	1,022.1	0.4
BM	105,420	1,291	8,222	4.7	1,027.6	1,027.6	1,028.6	1.0
BN	107,498	1,244	8,582	4.5	1,034.9	1,034.9	1,035.7	0.8
BO	109,492	918	7,314	6.0	1,042.5	1,042.5	1,042.8	0.3
BP	111,114	1,299	9,410	4.1	1,045.9	1,045.9	1,046.4	0.4
BQ	113,582	1,442	11,942	3.2	1,051.2	1,051.2	1,051.9	0.7
BR	115,204	1,407	11,069	3.7	1,053.5	1,053.5	1,054.2	0.7
BS	117,211	2,136	18,524	2.3	1,058.8	1,058.8	1,059.6	0.8
BT	119,208	2,749	20,557	1.9	1,061.4	1,061.4	1,062.3	0.9
BU	121,360	3,097	16,476	2.3	1,063.8	1,063.8	1,064.6	0.8
BV	123,358	2,858	9,649	2.3	1,066.0	1,066.0	1,066.6	0.6
BW	125,306	2,544	7,719	2.8	1,069.1	1,069.1	1,069.2	0.1
BX	127,394	2,265	8,697	2.5	1,076.0	1,076.0	1,076.6	0.6
BY	129,349	2,344	9,261	2.3	1,079.8	1,079.8	1,080.4	0.6
BZ	131,256	2,979	12,009	1.8	1,083.3	1,083.3	1,084.0	0.7
CA	133,382	2,226	11,397	1.9	1,088.0	1,088.0	1,088.9	0.9

<sup>1</sup>Feet above confluence with Gila River

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ

AND INCORPORATED AREAS

FLOODWAY DATA

CENTENNIAL WASH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Centennial Wash (continued)								
CB	135,474	1,386	5,831	3.7	1,092.0	1,092.0	1,092.3	0.3
CC	137,122	1,693	9,114	2.4	1,096.5	1,096.5	1,097.3	0.8
CD	139,543	1,920	9,101	2.4	1,101.2	1,101.2	1,101.7	0.5
CE	141,116	1,942	9,686	2.3	1,105.0	1,105.0	1,105.9	0.9
CF	143,353	1,852	7,095	3.1	1,109.5	1,109.5	1,109.7	0.2
CG	145,212	1,920	8,143	2.7	1,116.5	1,116.5	1,116.7	0.3
CH	147,005	2,344	8,310	2.7	1,121.9	1,121.9	1,122.5	0.6
CI	149,541	1,811	8,443	1.9	1,129.3	1,129.3	1,130.0	0.7
CJ	151,228	1,626	6,575	2.4	1,133.5	1,133.5	1,133.8	0.3
CK	153,289	1,541	6,700	2.4	1,139.2	1,139.2	1,139.8	0.6
CL	155,348	1,488	5,250	3.3	1,145.1	1,145.1	1,145.5	0.4
CM	157,332	1,304	4,715	3.6	1,151.2	1,151.2	1,152.0	0.8
CN	159,321	1,980	5,725	3.0	1,157.8	1,157.8	1,158.5	0.7
CO	161,362	3,161	7,900	2.6	1,164.9	1,164.9	1,165.4	0.5
CP	163,216	3,125	8,676	2.3	1,170.7	1,170.7	1,171.6	0.9
CQ	165,332	3,013	7,031	2.9	1,176.7	1,176.7	1,177.5	0.8
CR	167,445	2,512	4,902	4.1	1,182.1	1,182.1	1,182.4	0.3
CS	169,214	2,441	7,020	2.9	1,188.8	1,188.8	1,189.7	0.9
CT	171,584	2,820	9,290	2.5	1,196.0	1,196.0	1,196.8	0.8
CU	173,276	2,934	9,803	2.4	1,201.6	1,201.6	1,202.5	0.9

<sup>1</sup>Feet above confluence with Gila River

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY,AZ

AND INCORPORATED AREAS

FLOODWAY DATA

CENTENNIAL WASH

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Centennial Wash (continued)								
CV	175,210	2,429	5,337	4.4	1,207.2	1,207.2	1,207.7	0.5
CW	177,311	2,553	5,799	4.1	1,214.0	1,214.0	1,214.7	0.7
CX	179,183	3,045	7,823	4.4	1,220.6	1,220.6	1,221.4	0.8
CY	181,416	4,551	9,936	3.5	1,226.7	1,226.7	1,227.7	1.0
CZ	183,405	3,836	9,233	3.7	1,233.0	1,233.0	1,233.8	0.8
DA	185,355	3,419	10,735	3.2	1,239.2	1,239.2	1,240.0	0.8
DB	187,291	2,914	11,472	3.0	1,245.0	1,245.0	1,245.7	0.7
DC	189,502	2,085	9,825	3.5	1,251.7	1,251.7	1,252.4	0.7
DD	191,400	1,875	9,098	3.8	1,256.7	1,256.7	1,257.4	0.7
DE	193,397	1,730	9,436	3.6	1,262.0	1,262.0	1,262.8	0.8
DF	195,412	1,727	8,673	4.0	1,266.7	1,266.7	1,267.3	0.6
DG	197,228	1,519	8,550	4.0	1,271.3	1,271.3	1,272.0	0.7
DH	199,264	1,432	8,549	4.0	1,276.5	1,276.5	1,277.4	0.9
DI	201,408	1,832	7,827	4.4	1,282.4	1,282.4	1,282.9	0.5
DJ	203,541	2,154	8,318	4.1	1,289.3	1,289.3	1,289.7	0.4
DK	205,463	2,153	10,672	3.2	1,295.5	1,295.5	1,296.4	0.9
DL	207,227	1,826	9,641	3.6	1,300.7	1,300.7	1,301.5	0.8
DM	209,283	1,680	9,178	3.7	1,307.3	1,307.3	1,308.2	0.9
DN	211,329	2,061	9,381	3.7	1,313.5	1,313.5	1,314.2	0.7
DO	213,828	2,017	8,299	4.1	1,322.7	1,322.7	1,323.0	0.3

<sup>1</sup>Feet above confluence with Gila River

TABLE 6	FEDERAL EMERGENCY MANAGEMENT AGENCY		FLOODWAY DATA	
	MARICOPA COUNTY, AZ		CENTENNIAL WASH	
	AND INCORPORATED AREAS			

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Centennial Wash Field Overflow								
A	1,170	5,232	17,180	2.8	843.7	843.7	843.8	0.1
B	1,993	5,304	16,398	2.3	845.4	845.4	845.4	0.0
C	3,181	4,749	14,049	2.4	847.9	847.9	847.9	0.0
D	4,324	707	19,347	0.6	851.8	851.8	851.8	0.0

<sup>1</sup>Feet above confluence with Centennial Wash

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY  
MARICOPA COUNTY, AZ  
AND INCORPORATED AREAS

## FLOODWAY DATA

CENTENNIAL WASH FIELD OVERFLOW

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION (FEET NAVD88)			
CROSS SECTION	DISTANCE <sup>1</sup>	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE
Centennial Wash West Railroad Overflow								
A	3,165	599	2,004	2.5	851.8	849.5 <sup>2</sup>	849.5 <sup>2</sup>	0.0
B	4,039	408	1,591	2.4	852.3	852.3	853.0	0.7
C	5,101	540	2,940	3.4	853.3	853.3	854.2	0.9
D	6,039	691	3,342	3.0	855.0	855.0	855.6	0.6
E	7,044	833	4,433	2.3	856.0	856.0	856.8	0.8
F	8,040	1,117	6,850	3.3	857.1	857.1	857.9	0.8
G	9,241	2,146	12,265	1.8	857.6	857.6	858.5	0.9

<sup>1</sup>Feet above confluence with Centennial Wash

<sup>2</sup>Elevation computed without consideration of backwater effects from Centennial Wash Field Overflow

TABLE 6

FEDERAL EMERGENCY MANAGEMENT AGENCY

MARICOPA COUNTY, AZ

AND INCORPORATED AREAS

FLOODWAY DATA

CENTENNIAL WASH WEST RAILROAD OVERFLOW